

Indian Fields.
Oil Spring. SE of hotel. At the Oil
spring. Also location of Soda
spring.

Level of the Soda Spring.

- 14" Fossil Black shale.
3" More solid layer, earthy, bluish
gray, weathering irregularly
shaly.
12" More shaly, part of it (near top)
very fissile and black.
10" Solid, light brown, like breccia-
ted layer, but not brecciated.
12" Strongly brecciated and weather-
ed as to bring out this brecciated
idea splendidly!!! Wish I
could get a photograph. Contains
crinoid stems, Cyathophylloids
and farosites, corals.
2" Black shale.
14" Solid, light brown limestone.
Contains black nodules near
base, up to $5/8$ in. in length.
Oil spring issues at this
level or just below.

in water
Top of hill with water, possibly
35-40 ft Black shale
15 ft Clay layers in Black shale, especially
in lower part.
75 ft Black shale
Soda spring.

North east of hotel 100 yds, in
a little run west of the creek,
Oak Springs hotel.

Black shale

- 10 in solid limestone.
- 10 in brecciated layer
- 14 in solid limestone.
- 18 in limestone, with some corals.
- 18 in fairly exposed solid l. in part
- 4 in bit exposed, soft.
- 15 in solid limestone, hard, white m.
- 1 in rotten stone.
- 5 in 9 in brown stone with nodules.
- 4 in rotten stone
- 4 in same brown stone with black nodules.

See next page

- A 46 in. crinoidal with 1 ft of
base, with corals (Hind's
also). Chert in middle
+ upper part.
- 18 in. *Argillaea* common.

4 in. soft, with 1 ft. of chert, but
no nodules.

8 R. Plum creek locality.
Photo 1. Plum creek clay.
Plate A. Plum creek clay.

On west side of Plum creek
east of the road.

Photo shows top of Plum
creek clay. The top is slightly
below creek level here.
Thickness of Plum creek clay
exposed here is 5 ft 3 in.

Elfin limestone rather heavy
here.

Directly east of George Mc
Intosh house.

Elfin limestone.

Lower half

Cyathophylloids & *Calymene* common.

Leptæna rhomboidalis.

Dalmanella elegans.

Platystrophia - *Dalmanella* 3 ft. at
top. 5 ft. of *Argillaea* layers about 6 ft. below
the top.

Upper half

Strophomena like *patula* but
apparently with *subtriangular*
not here.

Strick 10 ft. in new top.

13 ft. testate clay.

14 in. = 2 ft. layer limestone.

17 ft. West limestone + claystone.

18 in. *Argillaea* mostly brown limestone.

1 ft. crinoidal l. with corals.

A 6 in. soft argillaceous rock,
see preceding page.

Along top of road, verifying
what is left of Black shale,
between Plum creek &
Tipton ferry, - sand and
quartz pebbles $\frac{3}{4}$ in long in
some cases. Some for-
mation.

N side of Tipton ferry.

16 ft 2 ft layer to base of
Devonian.
Collected trace fossils

Photo 2 Devonian limestone
~~Photo B~~ along RR
Gardner West of Day City.

Opp. Green McDowell's house.
1 mi West of Day City

East of loc. 2, 1 mi. SE of Indian
Fields, along the road running
north, on the north side of Lull-
gund creek.

Devonian
20 ft Clay with trace fossils beneath - 8° 3"
9 in. l. = 2 ft layer.
13 ft Estill clay.
6 ft Limestone limited exposure.
5 1/2 ft not exposed.
Lullgund creek

Brown low Brunner.

1/4 mi. S of Indian Fields.

Devonian
20 ft. clay, trace fossils.
9 in. limestone = 2 ft layer.
Just west of Lullgund creek
(Top of Elkins limestone with
Stricklandinia in bottom
of creek.)
13 ft Estill clay
Top of Elkins limestone and
with Stricklandinia.
not covered with John Cuff.

Along North Fork of Lulac-
 creek, 1 mi. E of
 North of Riddville.

36 ft about estimated
 50 ft about estimated interval
 29 ft Pseudo Madison measured
 21 ft estimated.
 136 ft Richmond. Measurement
 mid of corner.

Sp. 10 ~~Photo 3~~ Contrast of Irvine
 Plate C. Terrigenous clay
 formation & Roubidoux
 rising above the
 2 banks. Taken from
 point slightly east of
 mouth of creek, point of
 Riddville. Looking
 North Fork of Riddville.
 Direction of river, as at
 S E from here.

Photo 4 Richmond below
 Plate D. Clinton, at
 Hornback curve of L & E
 RR = 1 1/2 mi. W of Indian
 Field.

70 ft to mile of road

Photo 5 2nd cut west of
 Plate E Hornback curve.
 Lower part of Richmond.

Photo 6. Lowest Richmond,
 just E of upper Lorraine -
 present along P. R. east of
 Lorraine. Collected & measured
 note book. Collected & measured
 Richmond and here for analysis.
 20 ft of this section.

Immediately above is clay
 rock of Middle beds of
 Richmond.

Immediately below is thin
 clay section at base of
 Richmond, not exposed,
 possibly 20 ft thick, but
 impossible to tell.
 Lignite beds here.

The house on N side of road at
 eastern Lorraine exposure is
 that of John W. Abbott.

2nd cut E of Abbott's Lorraine ex-
 position. Lowest part of Middle
 Richmond with of clay
 exposure. Collected &
 for analysis. 30 ft up to
 massive layer at west end of
 cut. 3 samples near base.

Photo 5 Plate E. [unclear]
 massive layer in [unclear]
 in the [unclear] 15 in thick - massive
 [unclear] 8 ft. [unclear] E. [unclear]
 with [unclear] [unclear] [unclear]
 cut [unclear] [unclear] [unclear]
 2nd [unclear] 17 ft. [unclear] [unclear]
 with [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]

From [unclear] [unclear] [unclear] with
 exposed [unclear] [unclear] east
 of [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]

Photo 5. Plate E. [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]

17 ft. of [unclear] [unclear]
 above the [unclear] [unclear]
 [unclear] [unclear] [unclear]
 at [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]

Clipped in base.
 22 ft. clayey. top 10 ft. soft
 [unclear] [unclear] [unclear]
 17 ft. [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 18 ft. [unclear] [unclear] [unclear]
 level of [unclear] [unclear]
 12 ft. [unclear]
 1 1/2 ft. [unclear]
 5 ft. [unclear]
 Top of [unclear] [unclear] [unclear]

Photo 1. B. [unclear]
 Plate F [unclear]
 [unclear] [unclear]
 7 ft. [unclear] [unclear]
 5 ft. [unclear] [unclear]
 2nd cut [unclear] [unclear]

The next cut east [unclear]
 ferruginous layers within a
 feet of top of [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]
 [unclear] [unclear] [unclear]

At [unclear] [unclear] [unclear]
 18 in. [unclear] [unclear]
 7 ft. [unclear] [unclear]

Shine clay at great clay
pit $3/4$ mile west of Indian
Fields. Range from 20 to
50 ft in thickness. and is
very sandy.

Photo 2 B. View across the
Shine. Perhaps 1/2 mile to
west. Beyond from
clay pit $3/4$ mile west of
Shine. South end of
cut road.

Photo 3 B. View across the
Shine. Indian Fields.
From 1/2 mile west of Indian
Fields. At the station.

Photo 4 B. View of 9 in
2 foot ledge at locality
east of Brainerd Brainerd.

A1. 1 mi NE of Kiddville, along
road following North
Fork of Gulbequid, McIntosh
Co. Lower Richmond
Middle Part, Aug. F. Foerste,
Aug. 1905.

B1. 2 mi. W. of Indian Fields, at
first cut east of Tom Will
Abbott. Clark Co. Lower
part of Lower Richmond,
Aug. 1905.

B2. 2 mi. W. of Indian Fields, at
2nd cut east of Tom Will Abbott
Middle part of Lower Richmond.

B3. Cut just west of path leading
down to Jim Hornback.
 $17\frac{1}{2}$ - 25 ft above heavy
ledge at base of Middle
Richmond.

B4. 22-35 ft below level of Clinton.
Base of Upper Richmond.
Hornback Curve, $1\frac{1}{2}$ mi.
W of Indian Fields.

B5. Hornback curve. Middle part
of Upper Richmond.
Below base of Clinton.

B6. Hornback Curve. Top
Richmond. 0-10 ft

B7. Cut east of Hornback curve,
1/4 mi. W of Indian Fields,
Clark Co. Massive base of
Clinton or Brasfield bed.

B8. 2nd cut E of Hornback, ~~Upper~~
well bedded part of Clinton,
or Brasfield bed, 1/4 mi.
W of Indian Fields.

B9. Plum creek clay, 2nd
cut E of Hornback curve,
1/8 mi. W of Indian Fields,
This is last in photo ex-
posure.

B10. 3rd cut E of Hornback
Curve. Elkins lime-
stones.

B11. Ferruginous layer near
top of Elkins limestone,
= 0 to 2 ft below top, just
W of great fill 1/2 mi W.
of Indian Fields.

B12. Estill clay, 1st cut west
of great fill. W of Indian
Fields, 1 mi.

B13. Waco limestone, 1 mi. SE
of Indian Fields 1/8 mi.
E of Brown Blower, N of
Lubbeys rd up N road.

B14. Big clay pit 1/2 mi. West
of Indian Fields, Clark
Co. Orchard clay proper.

I

No 1269. page 16. Limestone from ore bank. one and a half miles from Old Slato Furnace, Bath Co. Bed 10-12 ft thick, (in?) the Clinton Group. Collected by Philip N. Moore.

II

No 1652. p. 18. Limestone from Slato Furnace Ore banks. Harvards Hill. Upper Silurian formation. P. N. Moore.

No 1653. p. 19. Upper part of bed of preceding.

No. 1654. Limestone ore at Chazy State Springs, Pilot Knob. P. N. Moore.

No 1655. Limestone found to be 20 ft thick, from near Springsville on road to Slato creek. P. N. Moore.

Madison Co.

2168. p. 51. Rept. 4. Clay; Milton Barlow, from near Bybee-
town, Bed 4 feet thick, in
Black Shale. John R. Proctor.
Clay of a light, iridescent-
grey color. Irregularly
and imperfectly laminated.
Quite plastic. Burns to a
delicate light reddish-
cream color; nearly white.

2169. Clay of workable thickness;
on the road leading from
Waco to Reddham, about
a mile and a half from
Waco. Probably below the
Coniferous limestone. John
R. Proctor.

A compact clay, generally
of a light olive-grey color,
stained irregularly
with ochreous & ferruginous
quite hard, of a hand-
some light brick color.

2170. Indurated clay, from of C. L.
Searcy, near Ellistown. Be-
neath the Coniferous limestone.
Bed 10 ft thick more or less.
A light, olive grey, laminated
clay, mottled with
ochreous or orange-colored

ferruginous infiltrations.
The laminæ are contorted.
It is quite plastic. Burns to
a handsome flesh color.

Dried at 212° F.

Silica	62.56	64.566	62.58
Alumina	24.78	20.16	22.94
Iron peroxide	1.80	4.20	3.76
Lime	Trace	.213	.56
Magnesia	.317	.641	.425
Pot ash	3.276	5.054	5.28
Soda	.294	none	.308
Combined H ₂ O + Loss	6.973	5.166	4.147
	No.	No.	No.
	2168	2169	2170

Madison continued
Marly shales of Madison Co.

2186. page 52. 4th Rept.

Marly shale, in the road
near A. Lake's place. Draining
creek. Niagara group.

Can drive grey or brownish
grey, somewhat firm shale,
mottled in parts. Quite
plastic with water when
powdered. Calves to a
light brick color.

2187. Marly shale or indurated

marly clay. On the hill
200 yds south of Dr. Free-
man's house. Probably the
same bed as No 2170. Be-
neath the Coniferous
limestone. The bed is 6
ft thick or more, and con-
tains gypsum. J. R. Porter

Generally in thin soft,
irregular laminæ,
of a light olive-grey
color, irregularly variegated
with brownish yellow or
a ochraceous. Contains
gypsum in irregular
crystals. Is quite plastic
with water. Burns quite
hard, of a handsome
light brick color.

Anderson Lake
300 yds W of
Draining creek.

2 mi S E of B. R. Porter's place
9 mi S E of Lake
Hill Lake.

Silica	42.30	48.78
Alumina	20.84	17.32
Iron peroxide	4.12	3.24
Lime sulphate gypsum		17.285
Slime	13.32	
Magnesia	.461	.496
Pot ash	2.387	4.768
Soda	.351	.24
Combined H ₂ O, CO ₂ & loss	16.221	5.871
	No	No
	2186	2187
		Just below Devonian.

Madison Co. Limestones.

2189. Shelly limestone in bed of Muddy creek, below J. A. Crumpton's, "Cumberland shales" Probably Clinton. John R. Procter. Of a dark mass - grey color. Generally quite friable; some portions are compact.

2190. Impure limestone, top of Cumberland and shales, upper 12 inches. Found below the mill-dam on Muddy creek. Cellistia, a pretty firm, fine-grained, compact rock, of a handsome light olive grey color.

2191. Impure limestone, top of Cumberland and shale. From 18 to 30 inches below the massive limestone of the Silurian on the creek.

Rather darker than the next one. Color inclining to bluish, not so hard as that.

2192. Impure limestone,
resting on top of Cumberland
shales. Bottom stratum.
From below the mill dam
on Muddy creek.

A granular lime-
stone, somewhat cellu-
lar, containing
some petroleum, which
gives it a brownish color.
It weathers ochraceous.

2193. Impure limestone, Nia-
gara, Top stratum. 8 in.
thick. From below the mill
dam on Muddy creek.
Cellistone.

An impure granular
limestone; somewhat
cellular, dark brownish-
grey, somewhat mottled,
contains petroleum,
the infiltration of which
gave the dark color to
the rock. Weathers fer-
ruginous.

2194. Impure limestone.
Second from top. From
just below mill dam
on Muddy creek. Cellistone.

Resembles preceding,
but is darker colored,
contains petroleum +
some iron pyrites.

2195. Impure limestone,
Niagara, Third stratum
from top. From below
mill dam, Muddy
creek. Cellistone.

Resembles preceding,
rather finer grained
and harder, contains
petroleum. Exterior
surface weathers ferru-
ginous.

2196. Impure limestone, Clinton
group? From the quarry
north of Rogersville.

A compact a fine
granular rock, uni-
formly ferruginous, of an
olive grey color, in some
parts brownish, con-
tains some iron pyrites.

2197. Limestone from below the
Canda-galli pit at the
base of the Coniferous
limestone.

A fine granular, brown-
ish grey rock, gives the
odor of petroleum when
heated, and probably was
color to this rock.

2198. Bituminous limestone
from above the Coniferous
limestone, 3-10 ft thick,
from near Elliston.

Generally of a dull,
brunish black, or grey
black color. Some pieces
with bands of a lighter
grey tint. It is a fine
granular rock.

2199. Impure limestone. Top
of the Coniferous lime-
stone. Total thickness
15 feet, with intercalated
beds of pure limestone
6 in. or thicker.

A tough fine granular
or compact rock.

Samples from different
levels are mixed. Some
are brownish-black,
someumber-colored,
and some intermediate
in tint.

2200 Limestone, on the road
one mile south of Mrs.
S. J. Embry, intercalated
with the so-called Black
Band, a bituminous
limestone.

A dull buff grey fine
granular rock, with some
little infiltration of fine
hydrated iron oxide.

lime carbonate	48.53	37.76	33.56	45.70	50.86	50.96
Magnesia "	11.79	10.05	6.855	27.475	20.10	27.972
Alumina	10.33	17.656	21.256	11.360	9.96	5.96
Phosphoric acid		.204	.204	3.50*	3.90	3.556
Silica peroxid		3.70	4.120			5.76
Iron sulphid						2.76
Potash	1.696	.458	.578	.501	.054	.087
Soda	.347	.090	.045	.088	10.87	6.493
Bitumen, loss	6.567	4.902	4.302			
Water & loss	20.74	25.18	29.08	9.980	3.98	4.12
Siliceous matter						
Gr of lime	27.173	21.145	18.794	25.592	28.48	28.538
" " magnesia	5.614	4.785	3.251	13.083	9.608	13.319
" " silica	Not est	20.98	22.80	Not est	not est	Not est
	Not	Not	Not	Not	Not	Not
	2189	2190	2191	2192	2193	2194

* mostly ferrous oxide

Lime carb.	51.20	35.16	43.06	41.15	36.58	47.58
Magn. Carb.	25.124	4.646	9.994	13.908	18.541	17.133
Alumina	12.36	10.706	29.42	9.04	4.01	
Phosph. acid	.146	.754				10.98
Iron peroxid	4.46	2.060	2.640	1.89	1.540	
Syn sulphur						
Spot ash	.287	2.033	.770			
Soda	.049	.586	.149	13.022	7.339	Not ext.
Bitum. & 20 lbs	2.46		11.287			
H ₂ O & loss		4.275				6.117
Silic. residue	3.92	39.78	22.68	20.99	31.99	18.19
Gr of lime	28.672	19.689	24.113	23.044	20.485	26.645
Gr of magnesia	11.889	2.212	4.756	6.384	8.781	8.158
Gr of silica	Not ext	Not ext	Not ext	Not ext	Not ext	Not ext
	No	No	No	No	No	No
	2195	2196	2197	2198	2199	2200.

2200 Int earthy Black shale.

2198 Earthy Black shale.

2199 Dev.

2197 Dev.

2193 Elkins l?

2194 Elkins l? or Clinton?

2195 Elkins? or Clinton

2192 Base of Clinton

2190 Richmond

2191 Richmond

2189 Richmond

Madison Cr.

2209. page 62. 4th Rep.

Sulphur water from a spring
on the farm of C. L. Searcy,
Elliston. In the Niagara
Group.

Composition of Saline contents
of this water, in 1000 parts.

Line carb.	.2040	} Held in solution by carbonic acid.
Magnesia carb.	.0322	
Iron carb + phosphoric acid	.0172	
Silica	.0045	

Line sulphate	.4301	} Left dis- solved in H ₂ O after long boiling.
Calcium chloride	.0124	
Magnesium chloride	.0920	
Potassium chloride	.0380	
Sodium chloride	.3221	
Soda carbonate	.0937	
Silica	.0018	
Lithium strontium + sodium sulphate	— traces	
Organic matter + loss	.3294	

Total solid matter in 1000
parts = 1.5774.

Free CO₂ & H₂S not deter-
mined.

Byyle Cr.

2281. Phosphatic nodules
(coprolites) at base of
Warby, Byyle Cr.

Bituminous matter,
Ferrus carbonate,
29.10 % of P₂O₅

Nelson Co.

2393. Sandstone. Phosphatic,
From the black Devonian
slate in the Boston dist-
rict, locally 10 in. thick,
Contains fish & other organic
remains.

Grey sandstone, mostly
made up of hyaline
grains of quartz, some-
what rounded, mixed
with dark colored gran-
ules and broken organic
remains.

67.04 silica.

{ Alumina
Iron oxid
lime
magnesia

11.162

.019

P₂O₅

Potash

Nelson Co.

2394. Limestone - ferruginous,
From near top of upper Hud-
son River beds, Cumberland
sandstone & shales, near
farm of S. P. Stiles. 4 mi.
N. of Bardonia.

a fine grained or rock of
dull grey color, brownish
yellow in weathered por-
tions.

2395. Limestone ferruginous.
From near S. P. Stiles
farm. Cumberland sand-
stone & shales.

a fine granular rock
of brownish yellow
ochre color.

Lime carb.	81.58	61.24
Magn. carb	1.501	8.915
Al. + Iron oxid.	2.978	4.317
P ₂ O ₅ Phosph. acid	1.202	.563
Potash	.423	.443
Soda	.248	.254
Siliceous residue	11.120	22.52
Mixture & loss	.948	1.748
	Nr	Nr
	2394	2395

Clark Cr.

2469. Phosphatic limestone,
Stewarts Mill, Sulphur
creek. Clark Cr. Crickany
formation.

A dark brown, con-
glomerate rock, contain-
ing many dark colored
fragments of fossil organic
remains.

2470. Phosphatic limestone
From near Howard's creek
Clark Cr. Crickany
formation? An im-
pure form of lime-
stone rock, grey brown
with ochreous material
in spots, contains fossil
impressions.

Lime carb.	21.38	33.98
Magn. carb.	3.055	11.185
Alp & iron oxid	ne	ne
P ₂ O ₅	9.71	1.842
Pot ash	.83	ne
Soda	.228	ne
Siliceous residue	27.58	31.72
	Ne	Ne
	2469	2470

Lewis Cr.

2484. Limestone, hydraulic.

Sent to Mr. Privet by Mr.
W. J. Richardson of Vancou-
ver, Lewis Cr.

A dull grey fine granular
rock, with faint lines of
stratification.

Lime carb.	48.79 = 27.322	Lime
Magn. carb.	37.482 = 17.834	Magn
Iron oxid + alp	2.49	
P ₂ O ₅	.143	
Pot ash	.49	
Soda	.058	
Soluble silica	1.150	
Insoluble silica + silicates	8.850	
Moisture + loss	.547	

Madison Co.

2496. Shaley Clay. From land of F.W. Lewis. 2 miles S of Bottom, about 100 yds to the left of Big Hill turnpike, about sp. the black m. sh. of F.W. Lewis. Bed 4-5 ft thick. On Niagara slab. Same of upper 10 in.

Sh. laminated clay with soft sh. of a light m. Fisher, grey color on the exterior, darker colored + brownish yell with grey in the interior.

2497. Shaley clay, same as last. From 10-20 in. below surface. M. Fisher.

Silica	59.000	42.56
Al. = 20.68 Or. perox. 396.	24.64	20.98
Lime	1.456	8.68
Magnesia	1.096	7.247
Pot ash	5.500	4.819
Soda	.217	.166
H ₂ O, CO ₂ & loss	8.091	15.548
	100.	100
2496		2497

Madison Co.

2499. M. sh. shale Eng. sh. Pigg's land, 4 miles south (= NE?) of Berea near the road from Berea to the Big Hill Turnpike, by way of Bottom. The locality is called Blue Lick. Wavy formation resting on Black shale. Mostly Fisher.

Silica	69.152
Al + Iron perox	20.39
Or. 15	trace
Lime carb.	.145
Magn. carb.	2.289
Pot ash	3.754
Soda	.747

Combined H₂O + loss 2.920.

Lincoln Co.

1873. Clay from head waters
of Green river, on land
of Mr. Thos. W. Varman.
Bed 2-4 ft from
the surface, said to be
42-45 feet thick,
resting on black shale
which is 50 ft thick.
Clay imperfectly laminated
of a dark olive-grey
color. Burns to a
grey buff color.

Silica.	61.58
Alum.	23.946
Iron peroxide	5.814
Lime	.201
Magnesia	.850
Pot ash	1.542
Soda	.362
H ₂ O + loss	5.705
P ₂ O ₅	Not detd.

1874. Crab Orchard Springs
Salts. put up by Crab
Orchard salts co.
B. Wil der & Co. Louisville.
1875 Crab Orchard Salt.
Arthur Peters Co.
Louisville.

Magn. sulphate	54.842	60.627
Soda	13.566	8.26
Pot ash	2.707	2.814
Lime	2.149	1.795
Lithia	.038	.028
Sodium chloride	2.954	1.874
Lime carb.	.032	.018
Magn.	.089	.036
Iron peroxide	.078	.028
Silica	.124	.118
H ₂ O of crystalli- zation + loss	23.421	24.402
	112	112.
	1874	1875

Madison Cr.

1876. Potter's clay. Quality 1.
Upper Silurian.
2 mi. E of Richmond.

A light soft grey clay
with some ochreous
stains + infiltration.

1876. Potter's clay. Quality
2. Same locality
of a bluish grey color.

Silica	59.976	56.96
Al. Iron & mag. Oxid.	27.640	28.74
Lime carb.	.280	.20
Magnesia	.606	.752
Pot ash	3.931	2.502
Soda	.547	.315
Combined H ₂ O & loss	7.020	10.531
	Nr	Nr
	1876a	1876b

Bath Cr.

For Olympian & Springs
see p. 17. (363 cut series)

1989. Ferruginous Magnesian
limestone. in the diatom
under Black Devonian
shale.

Lime carb.	54.06
Mag. carb.	34.027
Iron carb.	11.532
Pot ash	.006
Soda	.143
Silica	.040
	.280

Bath Co.

- 2575 Iron Ore. from Carmel
Rice. property of Captain
W G Allen. Clinton.
Ore of yellowish brown
color of usual struc-
ture in Clinton iron ore.
2576. Iron Ore from Purvis
lands. Clinton. Reddish
2577. Iron Ore. Wm Warden
near head of Rock Run
Bath Co. Clinton.
Ore of structure of Clinton
ore, reddish brown color.

Iron per cent,	47.63	51.43	58.570
Al.	5.468	5.132	3.72
Lime carb.	16.560	13.08	15.16
Magn.	9.974	9.444	4.528
P ₂ O ₅	1.202	1.138	1.01
Silica	7.16	7.800	6.96
H ₂ O expelled at 212	1.143	.693	1.607
Comb H ₂ O + c.	10.863	11.283	8.445
Gr of iron	36.001	40.999.	
	NV	NV	100
	2575	2576	2577

Fleming Co.

Wells, see p. 39, Part 3 A.

Marion Co.

Wells see p. 129, Part 3 A.

Index,

Black slate limestones
Bullitt Co. Vol 2, OS. p. 141-490
Madison Co. Vol 4. OS. p. 119-888
Madison Co. 4 OS. 212-1123
Nelson Co. 3. OS. 343-711

What are Black slate
limestones?

Coniferous limestones

Madison Co. Vol V. NS. p. 451
Nr. 2199

Madison Co. Vol V. NS. p. 451
Nr. 2200

Jefferson Co. Vol 4 OS. p. 195
Upper Sil? Nr 1077.

Jefferson Co. Vol 4. p. 195.
Upper Sil.? 1078.

Upper Silurian Niagara

Bullitt Co. Vol 4. OS. p. 105.
Nos. 856, 857

Estill Co. Vol 4 OS. p. 146-947.

Garland Co. Vol 4. OS. p. 156-985

Madison Co. Vol 5. NS. p. 449
Nos. 2193-2194 2195

Nelson Co. Vol. 4. OS. p. 231.

Nos. 1166 a. 1167.

Jefferson Co. Vol 4. OS. p. 185-
1077-1081.

Clinton.

Bullitt Co. Vol. 4. OS. p. 68.-796

Fleming Co. Vol 4. OS. p. 151.-973.
797

Crab Orchard clay

Madison Co. Vol V. NS. p. 445,
Nos 2169, 2170.
p. 446, Nos 2186-2187.

Upper Silurian marly clay.
Jefferson Co. Vol 4. OS. p. 192.
Nos. 1069, marly shales.

$\frac{52}{177} \frac{41}{1}$

$\frac{52}{7.5}$

Boyle Cr.

No. 2270. Chalybeate Mineral Water. From a well 8 ft deep, at the Camp Ground near Danville Junction. E D Fox.

2271. Old Chalybeate Spring Water, on Knoxville branch of L & N R R, + half a mile from Danville Junction, at Alum Springs.

Joseph Maxwell

2272. Chalybeate Water, From the so-called Phosphorus Spring. Alum Springs.

CO₂ not est.

Held in solution by CO₂ { FeCO₃
MgCO₃
CaCO₃
MgCO₃

See next page.

FeSO ₄	
Sulphate of Potash	.1977
" " Lime	.0235
" " Soda	.2917
" " Magn.	.1521
Mag. chloride	.2250
Sodium "	
Free H ₂ SO ₄	
Silica	
Undetermined + loss.	

No. 2270

Photo 5. B. R R cut at Brassfield. The Devonian forms 3 massive layers, and the underlying black shale forms the top layer, about as thick as the middle layer of Devonian limestone.

Photo 6 B. Photo, east side of 2 views, looking from road 1/4 mi. W of Brassfield across R R + adjacent valley to same place looking to further beyond.

Photo 1 C. Photo West side of preceding.

Brassfield Locality
Devonian L.
15 ft clay = Gull. L.
Limestone, at base of first str. in pit struck by a 1st land SE of Brassfield. The str. is thin, discolored white by iron scale = "sp. m." at base of same E of fence. Other fossils too distant.
30-32 ft interval from top of Alum L. to top of very massive Brassfield limestone.

No 2 C. Elkino limestone in
R.R. cut, 2nd cut & cut
after 1st turn SE of Brass
field. 7 ft. Elkino l.
exposed with weathered
clay on top.

NV 3C. Elkino limestone 11 ft.
overhangs ledge.
304" Elkino limestone? more clay.
Clay section Plum Creek.

NV 4C. Photo. Elkino limestone
11 ft. Top thin mud shelly
for 2 ft.
304" Elkino limestone
thin overhangs ledge
Clay, Plum Creek.

No 5 C. Photo. Elkino limestone
at base, but the more
massive part is 9 feet
thick & is weathered.
Clay at base covered by
rubble clay.

No 6 C. Photo. Plum Creek clay,
4 ft. 3 in. thin level bed
at base of clay. 10-15
ft. of limestone at top.

Corrected section from Brass
field to Panola.

Dominion
15 ft. Estill clay
11 ft. Elkino l. upper 2 ft in. thin.
3 ft 4" Elkino l. more clayey.
3 ft 3 in. clay, Plum Creek.
1 ft 10 in. Thin clay & 3 clay.
20 6" Massive l. with 6-9 in. rubble
at top.
Large crinoid heads here.
White fossils in lower part
of massive layer just
above.
1203" from top of crinoid head
limestone to top of the very
massive layer.
6" at least of very massive l.

Exposure in Estill clay near
Brassfield, and in clay
over R.R. Co. limestone near
Panola.

Inverness, Ky.

up to 2000 ft
clay without appreciable shale
7 1/2 ft abundant thin arg. shale in clay.
10 ft Water limestone
2 ft Limestone
14 1/2 ft Estill clay
telling limestone with
shells in a few places.

Az Plate. Top foot layer + over-
D7 Plate. Layer of water with
just a trace of overlying
crust in clay and clay
beneath the soil.

Huge Pile of about
1000 ft of clay roofing.

7 1/2
10

Loc

65

E. end of College Hill.

Per. I must use
14 ft. Water + overlying clay.
8 in = 2 ft layer.
14 ft Estill clay.
11 ft { telling limestone with water
{ thin limestone in bedded at top
4 ft 3 in { thin water clay with 10 in
{ massive beds of water film
{ white fine dottle layers with large
{ clay thin the top (1 ft thick) is the
{ layer in wave marked, see below
{ chert in. The top of next lower
5 1/2 ft Limestone + clay interbedded.
7 1/2 ft well bedded limestone very little clay.
16 in massive band of chert
33 ft white clay, water, some clayey.
1 1/2 ft Heavy layers of water out entirely
84 ft to heavy layers. All water clay
67 ft Telling all up to exposure
{ 9 in clay rock
{ 1 1/2 ft massive limestone
18 1/2 ft shaly rock, thin bedded, 1/2 in layers.
6 1/2 ft Limestone not rare
15 ft Limestone very few?
10 ft Limestone common but not
very common as in west. Am-
brous elsewhere.

Photo 2D, Taken from road
south of where road to Union City
turns off N. of College Hill looking
east across Pennsylvania
toward Clay City

67 A. North of College Hill N. of where road
turns off to Jackson Ferry,

17 1/2 ft Devonian, upper part.

5 ft thin bedded

5 1/2 ft thin bedded with Waco fossils

5 1/2 ft clay no fossils noticed

6 ft limonite = 2 ft layer with thin
strong fossiliferous markings

8 1/2 ft clay, light

7 1/2 ft thin bedded with small and fine
fat top, calcareous and thin
mass

{ 2 ft 6" Penn creek clay
3" limonite
6" clay
6" clay & limonite

66 B. North of valley. N. of College Hill

1 ft thin bedded clay

9 in thin bedded

3 ft limonite rock with small fossils common

1 ft 3 in limonite

4 ft clay abundant
corals

2 1/2 ft thin bedded limestone with

10 ft light brown massive Devonian
fossiliferous. Dev. fossils within
2 ft of base

60

S of Waco, S. of
stream, up hill,

11 ft base of Devonian

7 1/2 ft Waco limestone

10 in. 2 ft layer

13 ft bedded clay

5 1/2 ft thin bedded limestone & cl.

3 ft 6 in rather heavy limestone

6 ft interval clay Penn creek

2 1/2 ft Whitfordella layer

1 ft large curved limestone
beds

$\frac{1}{2}$ mi West of Tunnel W of
Middleton

Garnard } 75' ± ft
Middleton } 12 1/2' ft } 197 ft
Lower Mica

(Not sure?)
rock like the Garnard =
apparently interbedded with
Strophomena magnifica
5' ± to next one layers with
10' interval? same bed? etc?

60 ft to Marion Quarry to base.

5 1/2 ft to next fence
in the next
and slightly higher in 7 days -
have some Stroph.
8 1/2 ft to base of Garnard ss. thus

(Sketch)
Base of Garnard at top with
143 feet from Coltrane top to next fence.

I had no doubt about the base of Garnard
at bottom. Strophomena here or just
top of layer. It is thin yellow, & white
to be top of Coltrane = 15 ft above RR.
at first cut W. of bridge 54, and this
is same level as E end of bridge 54.
15' Platanus below but on
slightly above.

Middleton, Ky.

Middleton Lower Mica section
measured along RR with
corrections for dips = 93 1/2
and thickness = 12.1 1/2
Dip = 2.8 ft.

Photo 3D = Base of Garnard,
7 1/2 ft up to 2nd RR crossing E of Middleton
Locality 57 = Base of Garnard
12 ft up to RR cross E of Middleton
3 ft up to RR cross in George Middleton
17 ft up to bridge

12 ft up to bridge 61.
10 1/2 ft up to bridge 60.

3 1/2 ft up to Resale 59.
Same elevation at Middleton station
as at W. end of middle next
below that middle.
2 1/2 ft up to W. end of middle.

Bridges 56 & 57 at about same
level as east end of Tunnel.

East end of Tunnel = about 25 1/2 ft
above base of Mica.

Base of Tunnel = about 18 ft above
base of Mica. West end of
Tunnel

Bridge 55 is about 11 ft above
base of Mica.

Richmond & West

16 1/2 ft. Same kind of rock as before
up to RR depot at Richmond
12 ft. bedded clay with *Lynx*
fairly common at base. Up to
1 mi. N. of Richmond
33 ft. very rough arg. sand, *Lynx* not
abundant. Fossils rather
few. *Ammonites* at T

13 ft. Very rough stone, *Lynx* fairly
common; rough like *Lynx*
bed.

22 ft. Clay with fossils few, some
occasional *Lynx*, rough like *Lynx*
bed.

X 16 1/2 ft. Thin shaly clay, no fossils
look up. *Ammonites* at T
5 1/2 ft. *Ammonites* abundant.

5 1/2 ft. beds with *Ammonites*
Lynx, *Ammonites*,
(Resembles *Lynx* bed)

5 1/2 ft. *Lynx*, *Ammonites*, *Ammonites*
rough and very rough *Ammonites*
or that top part bed of *Ammonites*

U 3 miles west of Richmond
to next locality. W. 68

2 1/2 to 2 7/8 ft. up in bed of *Ammonites*
in *Ammonites* bed, *Ammonites*

18 mi. N. of Will Park S. of R.R. but
18 ft. *Ammonites* base at 2 mi. S. R.
crossing east of *Ammonites*
V 34 1/2 miles from base of *Ammonites*
with *Ammonites*, *Ammonites*
Totals 195 ft.

12 1/2 Cathays top

9 3/4 Willim top Loc 87

28 Gama top Loc 86

Strap top Loc U

Black sulphur water,

Iron carb +

H₂S in contact with iron
decompose + produce the
thick sulphur of iron
should be used only fresh at
spring.

Sulphur water.

Measurable = with
iron sulphate

Chalybeate water

Bicarbonate of iron.

2 feet water. Fresh at spring.

Chalybeate

Sulphate of iron

Saline water

Sodium chloride

Saline water

Sulphate chiefly

Byyle Co

No 2270 Chalybeate Mineral Water.
Well 8 ft deep at Camp Co and
near Danville junction.

2271. Old Chalybeate Spring Water.
Alum Springs, 1/2 mile
from junction on L & N.

2272. Phosphorus Spring at
Alum Springs.

2273. Small basin about
50 yds from 2270

2274. Bored well 40 ft deep, about
150 yds from 2270.

2275 Black Sulphur Water.
Alum Springs, 1/2 mile
from Danville junction.

2276. Black Sulphur Water.
Linnays Well = Springs,
at Linnaitta Springs,
formerly called Central
Ry. Camp & made

2277. Petroleum Springs
Well 8 ft deep at
Alum Springs.

2278. Epseme Mineral Water.
Falls Spring at
Linnaitta Springs.

Boyle Co

2279. Knott's Spring, at
Linnets Springs.
2280. Puter's Spring
Linnets Springs.
- 2280 A. Salt well, 40 ft deep,
300-400 yds from junction
of Dept. I. run. E.,
and about 40 yds from
2274
- 2280 B. Puter's Well, 10 ft
deep, well at Linnets
Springs.

Clark Co

2471. Magnesium sulfate well
at Riddan. Dr. J. E. Lewis.
2472. Salt Spring, near Linnets
Springs. A. M. Lewis.
Oreum mica granularis
Columella and other shells
2473. Chalky Spring, Straits
Well, near Linnets
Springs.
2474. Salt Spring, at Straits
Well. Linnets Springs.
- 2474 (bis) Red Sulphur
water. C. C. Lewis.
near Linnets Springs. Black
slate, W. M. Lewis.

Nr 856. Limestone on H C Pim-
dell farm, Bullitt Co. Ken-
n at Gap of the Roubid. Upper
Silurian Fossils.

Nr 857 Wyfan Silurian.

	Nr 856	Nr 857
CaCO ₃	50.98	52.88
MgCO ₃	37.74	37.577
Al + oxides of Fe + Mn	2.70	1.640
P ₂ O ₅	Trace	Trace
H ₂ SO ₄	not det.	.067
Potash	.463	.270
Soda	.226	.198
Silica + insol. silicates	6.380	5.98
Water + loss	1.504	1.388

888 Limestone, Aconc of Black
slate, Clarke Co. Ky. The
dense calcareous portion of
the gray black slate, found
also in Madison Bath
Pond, Estill, etc.

CaCO ₃	40.280
MgCO ₃	15.903
Al. oxides of Fe	
and Mn + phosphates	9.460
H ₂ SO ₄	1.025
Potash	.436
Soda	.164
Silica + insol. silicates	23.180
Bituminous matter	
water + loss	9.552

889. Sandstone with oil,
 some of Marcellus shale,
 Oil Springs, Clarke Co. Ky.
 dark grey, with oil. Cal-
 careous, some to mag. ani-
 tes impregnated with fluid
 bitumen. Weathered sur-
 faces of a dull buff color.

CaCO ₃	56.76
MgCO ₃	21.302
Al. Oxides Fe + Mn	11.260
P ₂ O ₅	.438
H ₂ SO ₄	.372
Potash	.193
Soda	.103
Silica + Insol. ash	2.480
Bituminous matter	
Total loss	7.092

946. Clay, Pitters Clay?

4 mi. NW of Irvine in the
 St. Louis and Tennessee, Kentucky.

Light buff gray with stratified
 layers of reddish. Appears to
 be principally fine grained
 sand with a few grains of
 speckling a coating of mica.

Silica.	71.78
Al.	17.58
Oxide of Fe	2.420
Lime, none	
Magnesia	.547
H ₂ SO ₄	.112
Potash	2.271
Soda	.322
H ₂ O expelled at red heat	4.400
Loss	.568

23.57 1000000

324 1000000

32.4

2.35

1.020

972

648

5280) 6.1.72 (1.44 miles

5280

23340

21120

22200

500

320

524

535

4120

2.472

1.48

5280) 1.36.40 (.36)

15840

34240

3660

32250

947.

Building stone.
5 miles from Irvine, on the
Richmond and Tennessee R.R. East of
Richmond.

Dark grey, fine grained l.
many small scales of mica.

CaCO ₃	41.383
MgCO ₃	30.019
CaO	4.321
Oxide of Fe	2.365
Al	.836
Brown Oxide of Mn	.480
P ₂ O ₅	.374
H ₂ SO ₄	1.471
Water	.482
Soda	.018
Silica & insol. sil.	18.620

973 Magnesian limestone
Clinton. Hillside angle.

Dull, dirty - buff, impure l.
with rounded beads, much of
mica, & brownish at bottom of
beds of iron.

CaCO ₃	= 42.650	71.700
MgCO ₃	= 25.358	9.731
FeCO ₃	5.155	
MnCO ₃	.421	
Oxide of Fe	11.073	12.24
Al	1.080	al.
P ₂ O ₅	.848	.630
H ₂ SO ₄	.324	.337
Water	.290	.371
Silica	.033	.139
Silica & insol. sil.	10.550	2.68
Fe & loss	1.258	1.802

No 674. Yellow Red Brown rock,
on horizontal l. 1 1/2 mi
E of Mt. Carmel, Tennessee.

1068 Bryozoa Building Stone,
75 ft. above Dean Mouth
West in Grant house at
Greenville Ky.
= Madison

	1068	1069.
CaCO ₃	45,880	26,88
MgCO ₃	22,911	1,687
Al. Oxide & Fe. & Mn.	5,760	7,260
P ₂ O ₅	220	1,694
H ₂ SO ₄	1269	406
P ₂ As ₂	347	965
Soda	372	012
Silica residue including water of Cryst. of Soda	3,60	silica 59,90
Quartz silica	18,520	
H ₂ O + loss	2,721.	2,196

1069 Marl from Chenoweth creek
Jefferson Co. Ky. Greenish
grey, clay like substance.

1083, Saline effluence or
crystalline from Devonian
Black slate, near David
Whitford, 8 mi from Clarkton
Wm. Lewis Co. Ky.
Yellowish-white.

Calcite of al.	25,585
" of Fe	15,653
" of Mg	1,000
" of Alkaline salt	8,000
Slate (impurities) + insoluble parts	1,000
H ₂ O + loss	48,762

Nov 1085

Yellow Magnesian on ls. near
Upper Salmon, Salt Lake
creek, 4 miles above Clark's
dam, Lewis Co. Ky.
Bastardly buff porous l.
Full of small pits. Sur-
face soft as to
be scratched with a nail.

1086. Same locality of limestone
dark - buff color at
foot of Salt Lake creek,
Adams. Smith's farm.
Lewis Co. 1085

Calc of Ca	55.240	SiO ₂	13.86
" Mg	27.820	"	7.32
Al. oxide Fe & Mn	12.280	"	5.860
P ₂ O ₅	.207	"	.118
H ₂ O	.152	"	.200
Potash	.167	"	trace
Soda	.126	"	trace
S. loss on heat	2.500	"	90.920
H ₂ O loss	1.428	"	2.230

1122. Potters clay near Walco,

1123. Magnesian limestone,
good building stone, from
Mr. Covington's farm, at Ballston
Madison Co.

1124 Black shale, flints of Madison
Co.

	1122	1123	1124
SiO ₂	62.58		Sand & sil. = 63.120
Al.	21.98	al. with Fe + Mn, 29.60	8.560
Oxide of Fe	4.78		
Calcine	trace	calc 30.729	Calc + Ca 11.180
Magnesia	1.76		2.034
Barium ox. of sulphate			
P ₂ O ₅	not det.	.271	.143
H ₂ O	.234	.509	.1683
Potash	2.697	.374	1.343
Soda	.500	.058	
H ₂ O on heating	6.140	14.150	Bitum. matter + H ₂ O = 12.00
at red heat		1.599	

Lign beds near edge of Macon
+ Flemington Crs.

1181, 1132, 1133.

1131 1132 1133

CWC 43	75.44	87.98	77.36
My Co	4.783	1.721	2.307
Al. Co. Fe. No.	3.751	2.200	3.910
P. 65	.409	.348	.310
H. 14	.474	.373	2.433 (Fe)
T. 14	.540	.289	.424
S. 14	.292	.047	.068
S. 14 cont. (incl. 14)	14.44	16.38	13.95
Grass		.663	.666

Nelora Co

Maplewood limestone.
1165 B and others green grey.
1166 Rellington Fork. Upper bed.
1167 Mr. J. S. T. T. T. building
at Nelora Co.

Melrose Co.

Gravel from the Turafoike
 bed of Mill Creek

Cal 603	93.98
W. 24	2.797
W. 24 of 500 m	.264
P. 12	.054
H. 0.4	.338
P. 12	.189
S. 0.4	0.00
Subtotal gravel etc.	3.040

Scotts Hill, in Tremble Co.

Stamps. M. a. d. i. p. beds &
 Rhynchotrema capax, Stenopora,
 P. a. m. b. o. m. e. s. s. t. r. a. t. e. d. e. l. e. m. e. n. t. a.
 m. i. t. t. e. n. g. D. a. c. t. i. n. e. s. s. u. b. q. u. a.
 a. c. t. i. n. e. s. s. M. y. c. l. o. n. i. a.
 m. a. t. r. i. x. v. e. l. e. t. m. a. n. d. s. h. i. l. l.
 Kentucky river

Carroll Co.

near toll gate near New York
 is D. a. c. t. i. n. e. s. s. s. u. b. q. u. a.
 & Stenopora, M. a. d. i. p. b. e. d. s.

770		2.40
235		2.35
3850		1700
2310		1020
1540		500
5200	12.09.58	34
	15.84.0	15.15.50
	224.50	493
	21.20	
	143.50	
		27.1.50
		264.00
		7.00

Road to Raywick.

Col. J. B. Wathen, $1\frac{3}{4}$ mi. west
of center of Lebanon, $\frac{1}{8}$ mi. West of
where road turns off south,
N20°W from house to gully or
gullied run, near lower part
of which, 62 feet below the level
of the house, is found top of
Platy, strapping Lyx range.
About 5 1/2 ft below this is an
Rhyolite thin dent stone, and
2 feet below is found Lefel several
feet thick. The creek must
be nearly 12 feet lower, but
this was not measured.

Rhyolite thin dent stone
also found along R.R.
cut on N side of the
road, 1/4 mi. W of house
to locality, N.E. side.

340 steps to fork of road (7)

340	(4.4 x 11 =
328	4.4
328	4.4
2.1 of 45 ft	4.84
total up =	11.0
	58 ft

16 1/2 ft from house up to ridge by road

1/4 mi. C Brown, 2 1/4 miles above
from C road to mine in Lebanon, directly
opposite the creek at Devonian
mentioned below.

Unindurated light grey Devonian L.
37 ft Platy strapping Lyx range, clay rock bedded
4 ft rock full of fossils including Rhyolite - Platy.
1/2 ft clay rock.
Praxipora
3 1/2 ft clay rock.
Top of range of Pl. Lyx.

41 ft thickening Black Shale W of
house at my road.

at B. D. D. road
A dip of 11 ft to 77 ft dip
22) 770 steps (100 ft - 40 ft dip)

Up a gully S.E. of Ben Darty, E of
highest part of hill S of house.

25 ft to top of hill. Devonian chert here
and down to next part - undulating.
143 ft up to Platy strapping Lyx range
5 1/2 ft white L. Rhyolite green
5 1/2 ft blue L.
5 1/2 ft blue L. with Straph. & Pl. Lyx.
5 1/2 ft up to Straph. range, in blue L. cement
5 1/2 ft creep up to Straph. L. range, in blue L. cement.

Rhynchotrema leptotum,
about 1 mile south of
Mudco, on east side
of Coney creek, and
is side of a branch empty-
ing into Coney creek,
at top of hill, and
probably is of a mile
from mouth of a branch.

A cabin is situated op-
posite the locality on the
N. side of the branch,
and a house is at the
head of the branch.
Fossils found on top of
a ridge that extends
between the branch and
a branch which is larger
and further south.
This locality is south of
the locality where *Dev.*
fossils are in great
abundance, but few
Devonian are found
with these.

associated with *Rh. dentatum*
= extended form of *Pl. lynch*,
also *Pl. aculeatum*.
W F Pate.

Linnway, on Nelson near Bloom-
field. W F Pate saw
some specimens near
Bloomfield.

P *Leptaena rhomboidalis*,
about 1 1/2 miles S E of
Cannons Gap, which is about 4 miles
from Lebanon on the
Doverville road. Turn
along a country road
S E, and 1 1/2 miles from
that road turn sharply
to left, across a branch,
3/4 mile to the branch,
at the road crossing.
Found on S side of a
little branch emptying
into big branch from
E.

Shelburne and Pate at
distillery in Boston B and
town road, about 1 mile
of B and town. At foot
of long hill 4 miles E of
B and town on Springfield
pike. At top of long hill
on RR west of B and town
from Springfield to B and town.

Trilobites *Stromeri*
2 1/2 mi (S) on pike
which runs down the
RR from Springfield
toward Broadstown.
The stream to the W of
the pike is near the RR.
Just E of said RR.
The RR cut can be seen
easily from the pike, and
a large tree stand in
the west of the pike. There
is a water gate near the
entrance.

Beatrixa (*confusa*?)
in quarry as you go
down the hill to bridge
over Rolling Fork,
on the road to Broad-
furness, 6 miles
from Lebanon. On
N side of road, before
reaching Rolling Fork, 1
mile from Jones Creek.

Beatrixa May in the head
waters of *Abbe Creek*
Not on creek but on
one of the branches.
It is a spring in the

Trilobites *quadruplicatus*
W. F. Pate found this.
Said to have been a
form from near Paris.

Trilobites *gymnolites*
Pate thinks he has
specimens.

Citharus *claytoni* 18-40 feet above
the *Birds*, Millville
in Woodford County.
The jet pike leaves the
old brown pike in the
bottom of a branch 200
yds from intersection
with the old brown pike.
Hundreds of fine spec
are found in very thin
clay layers.
at old reservoir just beyond
the park and E of Peak,
Mill pike, near Frank-
ford.
Found almost everywhere
at this horizon.

R D Murrell, on Caney Creek
road. From here .144 miles
north to main exposure of
which is located to the west
rock along creek. Clayey rock
with interbedded limestone
containing *Stroph. mayensis*,

R D Murrell = .367 miles from
forks of Caney creek north of L. me.

From Forks of road = .151 miles to
base of shale, where I made
my section.

From Forks road = .493 miles to
next fork, north road, 10 ft
rise of road.

From R D Murrell to forks of
road where R. M. T. road +
Bethel road meet. .860 miles.

12 ft from road exposure at Forks
of Caney Creek. R D Murrell to
top of the gray, interbedded layers,
16 ft further up to base of gully
section = 28 ft from road
where main exposure at
fork of road N of R D Murrell to
base of gully section.

22 ft rise of road gully section to
next fork northward. Distance cal-
culated at 115 ft. Total = 13 1/2 ft. from
gully to forks of road.

28 ft measured with out regard to dip
from forks of road to top of
beds with *Pl. lymex*. From base
to modules at top of fossilifer-
ous base of Richardson = 8 ft
more, total = 34 ft.
Distance calculated at 13 ft. Ground
total = 47 ft = Forks to modules

182 ft foot of gully to forks
179 ft foot of gully to modules
Calculation
170 ft measured vertically

The top of the Warren, for about 20 ft,
is rather soft clay rock. The
next lower part is the hard,
dense blue clay limestone
containing great masses,
both veins, etc., which form the
the fossils, which occur
on the high summits
at Vandalia, etc., and beneath
the Devonian rubble.

41 ft thickness of Black Shale

- 826 Paris
 794 Miller's
 842 Unbedded heavy l. in Catheys
 810 Cross-bedded l. in the gullies
 826 Carbonate
 845 Catheys
 860 Tunnel
 810 Base of massive Middle Eden
 765 Top of Catheys
 660 Myers
 Parker Hill
 Bridge over gulch
 Top of Catheys
 Pleasant Valley
 Tunnel
 Tunnel
 Canyon
 Spring
 West on
 Johnson
 The Long
 20 Mill Creek
 Marshall
 35 Bridge
 802 Summit

San Juan

- Section in road above
 ← Dolomitic gneiss, 1 spec.
 11 ft clay & limestone. No lignite.
 8 1/2 ft Limestone with lignite. But there is
 (No lignite)
 22 ft poorly exposed, partially c. & cl.
 Lignite
 Lignite beds along the river
 The section is not continuous
 at 5 ft. The section is to be
 24 ft Limestone, clay, lignite
 25 ft Lignite, clay, limestone
 8 ft Typical lignite from top of
 this level above the river.

First cut W of Pendleton Station
Banded Madison.

First cut E of Pendleton Station.
Well bedded clay rock with
conical fossiliferous, Cut
runs N 5 E. Fine for blue.
Dolomite, At lower end of
cut there is well bedded sandy
clay rock with fossils very
fine and small. W-sign

2nd cut E of Pendleton, Thin clayey
layers with badly weathered
thin limestone with *Streptelasma*
ms. Fossils very poor. At E
end of cut = massive 2 foot
layer of blue limestone
with *Streptelasma*, *planumbona*,

3rd exposure E side of RR cut on
Pendleton, thin layers 6 spec,
large *Leptæna* & *Planorbis* just
below this 2 foot limestone.
About 5 ft below the 2 ft layer
of limestone about 10 specimens
of *Leptæna* & *Planorbis*
were found.

4th cut from Pendleton station
Pendleton

5th cut on road between Pendleton & Columbia
via new bridge W sign

The *Columbiana* has the septa
curving close to the centre and
therefore may be *adversata*, but
the cells are large and it may
be a new species. Resembles
Leptæna specimen. *Columbiana*
Cypripedium. See section
south of Salt River for this
locality. The *Planorbis* is
very large, some specimens
3 in in diameter.

Top of exposure - cut E of home
on left of road.

Leptæna *retrorsa* 2/3 of top of
next cut. *Diastrophos* a further down.

Leptæna *commutata* next little
cut in limestone at top of cut.
In next cut *retrorsa* was
above, *Diastrophos* occurs
just above this limestone. The
Leptæna *retrorsa* was in this
preceding cut occurred at least
6 ft higher up.

Pendleton. Going east.
Base of Pendleton section.

- 8 ft { ... thin bedded
- 2 ft { ... from Nelson and ...
- ... in middle part, but ...
- ... in lower part ...
- 17 ft by a ...
- ... planumbona
- 1 1/2 ft { ...
- 5 ft { ... = ...
- ← ... horizon
- 13 ft { ... weathering
- 4 ft { ...
- 4 ft { ...
- 7 ft { ...
- 3 1/2 ft { ... with ...
- 5 ft { ...
- 1 1/2 ft { ...
- 2 1/2 ft { ...
- 5 1/2 ft { ...
- 22 ft { ...
- 6 ft { ...
- 2 ft { ...

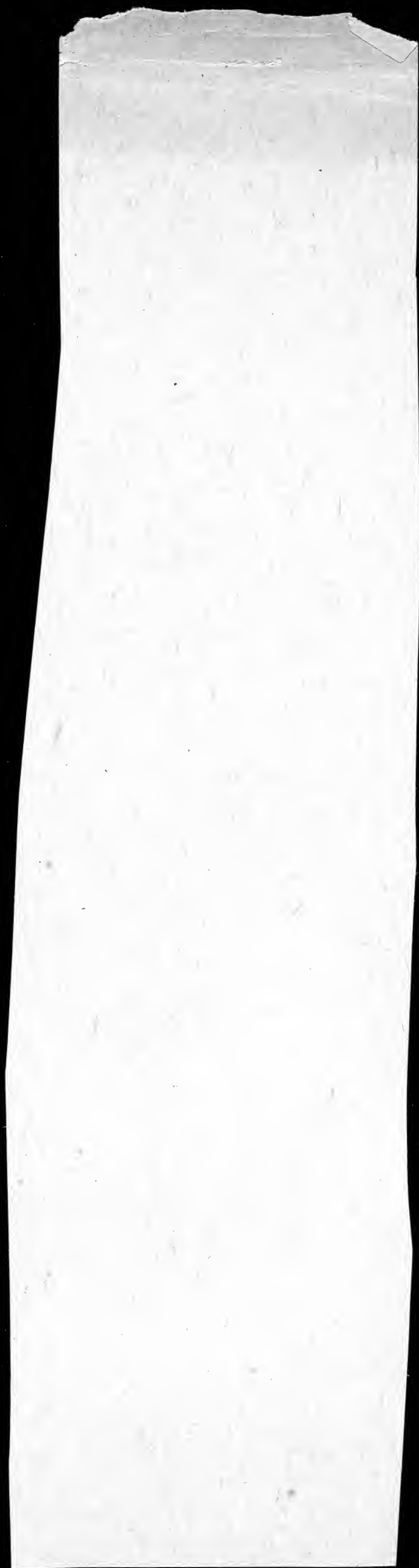
Pendleton - page 117
from ...

adina.

... the ...

... ..

... ..



Pendleton - on. Going out.
Base of Madison section.

- 8 1/2 ft { (specimens very
thin bedded
intermediate layers of sandstone = Nelson
and shale part)
Contains *Strophomena* in middle
part, but much decayed.
specimens of *Strophomena* in lower
thin bedded sandstone, fossil.
17 ft by a clay - micaceous part.
Common, also *Strophomena* *planumbona*.
1 1/2 ft { *Strophomena* with *Strophomena*
planumbona = Bull Creek section
5 ft Clay with *Strophomena* *planumbona*, *Strophomena*
← 3 ft *Strophomena* horizon
13 ft { *Strophomena* in clay with weathering
4 ft Clay rock, *Strophomena* *planumbona*, *Strophomena*
4 1/2 ft Dark gray in clay rock, *Strophomena*, *Strophomena*
7 ft Clay rock.
3 1/2 ft Darker clay, interbedded with clay rock.
5 ft Light greenish gray clay.
1 1/2 ft { *Strophomena* in clay, in lower part
{ *Strophomena* of *Strophomena* horizon,
{ with *Strophomena*, *Strophomena* *planumbona*
2 1/2 ft { up to *Strophomena* *planumbona*, associated
{ *Strophomena* but is not *Strophomena*.
5 1/2 ft { very clayey, corresponds to nodular
{ type
22 ft { blue limestone of typical Warren
up to top of *Strophomena* *planumbona* clayey
6 ft up to *Strophomena* *planumbona* in clay shale,
2 ft up to *Strophomena* *planumbona*, excellent spec.
Strophomena *planumbona* in limestone.

Pendleton - page 147
Madison section not reached

More clayey Madison.

23 ft,
Corrected.

Fossiliferous limestone.

18 1/2 ft
corrected
for dip

51 ft
not corrected

28 ft. probably needs correction.

2 months, No lynx.

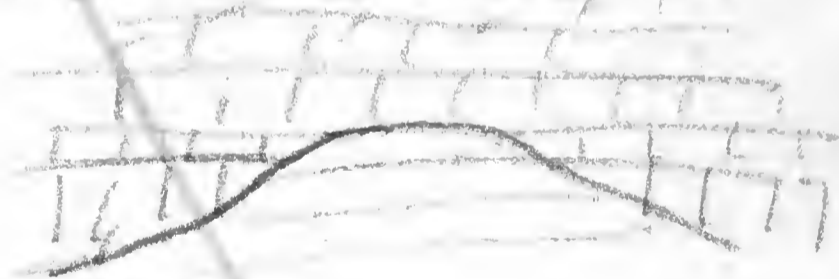
H. C. Black, Bedford, Ky.

On S side of Corn Creek, about
4 miles from Bedford. Fine
exposure from top of Madison
down to base of Clinton. Silurian
limestone. 68 ft from creek
to base of Clinton, 74 ft to top
of base of Bedford. 16 ft to top of
bed. Limestone well ex-
posed. Further north, transfer
to road about 1/2 mile over
to river further north.
Half a mile further north, on
the S side of the south fork of
Corn Creek, the Madison
rock is well exposed on the
east side of the road, exposure
about N + S. 5 1/2 miles to Bedford.

27 1/2 ft from north with Stroph.
retusata to base of massive
T. laticostata. 32 feet above to
top of massive bed of same
at road. Top of bed at road
good to cut to bed to bed up.
Continued down to 20 ft.

27½ ft to point where the Gannet met
the base of the Gannet may
be seen below this. 70 ft for top
of ridge, but no exposures.

5 ft. Clinton like rock. 1 foot addi-
tional rock at base resembling
the same. Beneath that is
undoubted Madison. Uncon-
formable contact between
base of Clinton & top of Madison
seen so that within 15 ft
the thickness of the Clinton
is about 3 1/2 feet, the lower
part being gone, where there
was an elevation in the
Madison.



Dipenthus 18th Dec. = 29th Feb. no
rock layer containing *Stroph.*
probably condensed, looks
very much like good ventral
valve of this species, also
several small *Dipenthus* and
Stroph. like form possibly
considered typical. 11 feet
above this to the Lingulella col-
lected. The rock here is

Opposite Mr. Charles Bartlett's house
is a small creek at head of
this gulch. In the bridge
is the *D. variabilis* retinosa
locus. *D. variabilis* retinosa
lives in 2 ft. 9 in. thick
Kendall's branch.

Leptocoma ²⁴*shufeldti* Rej. on edge plug

2 mi. S.W. of Jeffersonville,
Vanderburgh Co.,

Amphipoda williamsi

Orbiculoides sp.

Gastropoda (not certain)

? *Planorbis*, cf. *Baskin*

with? *Plethorhynchus* *arcuatus*, n. sp.

Sparganium *turmerici*

Damon?

Hydra *viridissima*

Berea, Ky. Vauclay,

Lingula *spatulata*, p. 100.

Vauclay

Paderewski, *Journal of the*
Vol. XVII. *Monthly*.

Annals of the New York Acad-
emy of Science.

I suspect they represent a
gigantic *Placodonta* as
yet under control 1889.

Trans. N.Y. Acad. Science
Vol. XVI. p. 282-309
Baskin & Damon

Bored Well. Jefferson County East,

M. E. Kline's Place,

Silicic Acid	8.381
Calcium Sulphate	26.042
Magnesium Sulphate	61.700
Calcium Bicarbonate	89.635
Sodium Chloride	559.852
Magnesium Bicarbonate	17.956
Sodium Sulphate	1.194
Potassium Sulphate	.324
Calcium Nitrate	.255
Manganese Bicarbonate	Trace
Sodium Borate	Trace
Sulphuretted Hydrogen Gas	1.566
Iron Bicarbonate	1.003
Alumina	2.053
Sodium Phosphate	Trace
Bromide and Iodides	Trace
Free Carbonic Acid Gas	6.960
Lithia	None
Organic Matter	None
Total Solids	756.420

SE of Jefferson
town

605

Stroph. ...
Stroph. very abundant.

601

Stroph. ...

593

Stroph. ... + Stroph. ...

See page 10 of Stroph.

675

Top of Stroph. ... zone.

645

Top of ... in mass ...

... horizon.

625

Massive clay ... with
P. ...

586

Colony ...
... in clay rock ...
... many ...

576

Top of ... Stroph.

570

Level of highest Stroph.
... seen. What is it?

540

Flint ...

1/580

Half mile west of Tidewater, along R.R.
at west end of ...

Platydictya ...

... abundant

... 15 ...

... large

No ... seen

Some of the ...

... abundant

... large

... rather small

... full

... 3 ...

... at ...

... level

... level

... level

... level

... level

... level

... level

... level

... level

... level

... level

... level

... level

... level

About 13 feet up is Columnaria
halli, forming body. The name-
ment not very exact on account
of size.

Section post 24

West of post 24 = white clayey fossiliferous
one section with, section = 13 ft. not exact.

- X Protoceras retusum common
- X Streptelasma retusum common
- X Pecten sp. in series
- X Helicotoma sp. in series median apertures
seen beyond middle of shell and
extending very obliquely to front.
- X Streptelasma retusum
- X Streptelasma retusum typical
- X Pecten sp. in series not yet seen
- X Streptelasma retusum
- X Streptelasma retusum capax, in series form
- X Streptelasma retusum, straight, 1 in.

White nodular small calcareous rubble
5 1/2 ft. at top of section. Richmond
section.

West of R.R. crossing a gravel road is
more white clay with
Streptelasma retusum
Streptelasma retusum

25 ft. thick bedded Madison sand thick near
not known on. and west of dip. for

12 1/2 ft. Mass. Madison measured,

3 1/2 ft. fossiliferous thick sand bed, thick bedded
3 1/2 ft. Top of Madison section. Massive
1 ft. Clinton Helicotoma calciculata
small tubes.

Here white calciculata.

Overhead bridge on road to Pott's
farm. In road.

Miss Liddy Moody, home on farm
Clinton at R.R. = 715 ft. judging
from level on bridge, = 700 east of
road, nearly to river.

Upper part of massive Madison
seen 1 mi. west of Tucker.
As good clay, but not cut west.

Clinton top in bottom of quarry in road.

19 ft. 4 in. layer of clay
5 1/2 ft. As good limestone, lower level
3 1/2 ft. Upper As good clay.
14 ft. of sand with small pebbles, some
large with a lot of small pebbles
and into some sections covered with
rounded pebbles, rock below.

17 in.
7 in.
15 in.
3 in.
11 in.
5 in.
22 in. = { 10 & acting double ledge
12

overlying layers weathered yellow-
ish.

Photo 1-E. F. Tucker. In N. side of R.R.

Conduct station, Capron & Clinton
 just east of point 21. — 662 ft.
 Some exposure of almost full
 exposed section beneath bridge as
 bridge low than half a mile
 east of station entirely clear
 all place NE, 1 mi. West of Tucker,

Next cut west, west of long fall, where
 RR curves northward. There is only
 massive banded Massillon. But
 exposed only exposure N of RR,
 above RR bridge line = 1 mi East
 of Jeffersonville

Tucker, J. M. Dyer's report. Location
 of prominent buildings.

695 Jeffersonville 7 A.M.

555 Fisherville

655 Charles,

742 3 mi. west of Rock Lake

734 Veedale

715 Gorges

722 RR crossing

715 Eleventh St.

750 Shelbyville, 8 AM,

752. Shelbyville. *Stroph. maynardiensis*, common
Dalmanella emarginata common.
 At bridge and across Clear Creek.

790 Road corner 1 mi E of Shelbyville

805 J. A. Matlock's mail box = highest.
 found in road. *Stroph. maynardiensis*.
 common, *Dalmanella emarginata* common.
 Collected in road. 2 1/2 mi. East of
 Shelbyville. *Conostrophia communis*.

760 Heavy limestone layers. Down to 760
 with *St. maynardiensis* Int. and sub.
 with sandy looking layers & layers
 down to 745 at which also collected.
 Lower

735 In front of E. Pinkston, same fossils as
 above, in place of coarse grained limestone
Stroph. maynardiensis. *Conostrophia* etc.

730. Just east of E. Pinkston. Finest and
 with plenty of simple *Dalmanella*
emarginata & a few *Stroph. maynardiensis*.

Below this level *Dalmanella emarginata*
 very abundant in coarse limestone, but also
 in the sandy greenish thin bed. *Stroph.*
maynardiensis few but present. *Platystrophia*
hypostoma & *Stroph. maynardiensis* small.

722 Bridge level across Grist creek, 9th
A.M.

Section at Grist creek

6 ft up to lowest *Stroph. magnificus*
13 ft up to bridge level, base of *Holthope*
9 1/2 ft to top of heavy l. with *D. emaciat.*
Grist creek level abundant.

690 Base of *Holthope* at Grist bridge.

722 Bridge over Grist creek at 10, 15

770 SFS blades. First lower E of bridge

740 At house over branch of Grist creek,
4 mi E of Shelbyville.

726 To top of heavy rock, 2 ft thick, like
that considered at base of *Holthope*
as at Bridge over Grist creek,
but *Stroph. magnificus*
occurs beneath, with *H. alata*.

850 *Plat. lynx* abundant up to this level.

860 Comp. probably, important section
since last record, a sand,
appearing up to R. A. Jamison,
about 1 mi. West of Clay village, west
of deep valley of branch of Tick creek,
4 3/4 mi. East of Shelbyville.

847, just before reaching south end
of sheep farm in road, 3/4 mi W.
of Clay village.

805 Orange cast iron pipe bend

815 ft *Plat. lynx*, very fine, but large

(17 ft up to bridge. 1/2 mi W of Clay village
Creek level at bridge, with *Stroph.*
magnificus 5 ft above creek,
in layers full of *Stroph. lynx* and
few *Stroph. magnificus*. *Dal. emaciat.*
noticed but only
short search made here.
This must be one of upper part of
Farm out where *Pl. lynx* and
Stroph. magnificus come close
together.

875 road corner in Clay village at 12, 15

888. *Plat. lynx*, *Stroph. lynx*,
Rhynchotrema dentatum, *Stroph. lynx*
is this. Followed by *Stroph.*
nodularis rubble.

945. *Stroph. lynx*, the same thin layers
as at 888. There appears to be a
northward dip equal to that of the
road. *Stroph. lynx* and bottom of hill,
Then there is rock crossing the road
with strike N 25 E, and dip 20 East.
This rock contains *Stroph. lynx*
magnificus.

945. *Stroph. lynx*, *Stroph. lynx*,
showed me full of *Stroph. lynx*
and *Stroph. lynx* the same,
but were not above and not
first considered as being not
the same.

1015. Sandy Grist creek bed with
limestone layers with *Dal. emaciat.*
at top of first side

A slight dip in road of 15 ft feet in
 sand, not of which is *Helicella*
 with *Strophomena* showing in it =
 ? 1 chm. what small *Stroph.* *Canadensis*
 = *Helicella*. The dip of fault
 here. S. of it is a small middle
 exposure. Possibly a small *Stroph.* *Canadensis*
 fault is at this point.

1070 Same sandy sand and stuffs
 up to last fault, but the thin
 limestone layers here are
Strophomena as well as
Dalmanella *Canadensis*. Not 11 ft.
 1085 up to top of *Gray Butte* formation
 end of road. Top is clay
 with *Stroph.* *Canadensis*.

1112 Road of 15 ft dip. North
 road dips again. The clay
 has a dipping to have dip and
 less and which is indicated
 in residual clay.

1085 Dip to top level. No outcrop.
 1130 To top of road. No outcrop.
 Some fault at road for last
 half mile. Road, Madison, etc.

1225 To top of road. The road is
 as a wide road at the same point
 past there is a exposure of rock
 dipping about 15° E. and 15 ft by
 80 ft. This road is with
 following road road eastward.
 The fault is the same. *Stroph.* *Canadensis*
 dip 20 ft. *Stroph.* *Canadensis*. No *Helicella* can
 be made out here.

Part of the same general nature
 shows up along the main road
 road dipping southward, slopes
 eastward slightly. It is difficult to
 tell in the dip road which is *Stroph.*
 and to *Helicella*.

1070 When road turns down = plenty of
Strophomena *Canadensis* along the road
 going down. Here a by road turns off
 up hill toward the west. This
 by a *Stroph.* *Canadensis* probably is the
Stroph. *Canadensis* and *Helicella*. It shows up to

1125. Road to level. There is *Stroph.* *Canadensis*
 and *Helicella* in it. The *Stroph.* *Canadensis*
 is *Stroph.* *Canadensis* about 10 ft.
 and *Dalmanella* *Canadensis* a few.
 Further down the hill the *Stroph.* *Canadensis*
 is *Stroph.* *Canadensis* of *Stroph.* *Canadensis* *Canadensis*
 and *Helicella*.

950. Road turns NW to the road.
 To top of road. The rock is *Stroph.*
Stroph. *Canadensis* along the road
 from first exposure to the side
 road turns west up hill. at 1070.

935 Rock was *Stroph.* *Canadensis* *Stroph.* *Canadensis*
Dalmanella *Canadensis*. See *Stroph.* *Canadensis*
Stroph. *Canadensis*.

720 J. P. Hallman
 Along the road, at near *Stroph.* *Canadensis*
 name and his house is *Stroph.* *Canadensis*
Stroph. *Canadensis*, in the road way.
 A short distance further is the
Stroph. *Canadensis* *Stroph.* *Canadensis* *Stroph.* *Canadensis*

870. a short distance south of
 barn. *Polypora* is, along the
 road a thick thin limestone
 with *Strophomena* - *Polypora*
Strophomena - *Polypora* - *Polypora*
 common.

890 a quarter of a mile S of Williams
Polypora is abundant.

Further south, the colored rock
 of iron with *Strophomena* and
Polypora, further south a rock
 containing about E & W & dipping
 fully 40° exposed. *Strophomena*
 retent - *Strophomena* retent -

840 near I turning from creek road
 towards *Strophomena*.

752 Hemp Ridge

700 *Strophomena* Barometer
 changed but slightly
 today.

Where *Polypora* & *Strophomena* road
 from Tucker to Williams, *Strophomena*
 at 655 about

5 ft Upper *Strophomena* limestone

3 1/2 ft Upper *Strophomena* clay.

Barometer near Laurel bed,
 at John Wilson's house corner 662

at Wall & Swan's Road corner 758

Lower *Strophomena*.

Upper *Strophomena* clay

5 1/2 ft Upper *Strophomena* limestone

19 ft Upper *Strophomena* clay

18 in. *Strophomena*, *Strophomena* on *Strophomena*.

to *Strophomena* bed.

Shady *Strophomena* bed, *Strophomena* bed,
 4 in. *Strophomena*, west of *Strophomena* bed.

3 ft Upper *Strophomena* clay.

6 1/2 ft Upper *Strophomena* limestone
 Lower *Strophomena* clay.

1 1/2 ft *Strophomena* clay.

Calder Cox quarry, 1 1/2 miles East of
 Anderson on C & O RR.

Lower *Strophomena* bed only *Strophomena* - *Strophomena*.

12 1/2 ft *Strophomena* clay, *Strophomena*.

23 1/2 ft *Strophomena* rock exposed above water.

10 1/2 ft shows up east of the quarry & no
 clay rock exposed.

The rock till for building is *Strophomena*
 stone, 1000 ft. *Strophomena*.

17 ft of *Strophomena* bed in *Strophomena*
 is good building stone
 near *Strophomena* bed.

nearly 4 miles NE of La Grange in L+R
 { And including sample
 { Rest of Laurel section with bedded
 2° 4" { same as at quarry E of Lockport
 { Well bedded, 3-4 inch. layers, apparently
 3° { Good clay layer. No. 4, 5, 6,
 7° 6" { Good limestone. No. 1, 2, 3,
 { dip + measurements of the
 23° 6" { From top of clay, estimated from
 10° 6" { station
 10° Transition
 No. 10 sand

About 2 miles NE of La Grange in L+R
 Roadway to 11 miles NE of La-
 Grange.
 Near top of Clinton is seen
 at stream level, on side of RR, =
 1 mile NE of La Grange.
 Further E is seen a clay
 (good) layer, and 1/2 mi
 as good clay. The top of lower layer is
 at about the same level as the road.
 Clay shows change in composition
 from exposures further NE. Hence
 there must be a fault in
 country here with a downing of about
 45 feet.
 The fine spring on SE side of RR is
 miles from beneath good limestone.

La Grange 8 mi. to Westport, Tenn.
 Boardman by Mr. Hitt.

East of La Grange, on S. side, side of
 RR track, at quarry, 1/4 mile out
 of town.
 12 in. Clinton Road ballast
 18 in. {
 18 in. { Transition Building Rock
 18 in. {

Saluda bed is quarried
 also at that point.

Massive Saluda is quarried
 also by road N. of La
 Grange, east of pike.

Charles Runkley's quarry at SW edge of
 Jefferson town makes lower Laurel.

J.W. Black quarry, 1/2 mi SW of
 Jefferson town. Makes upper
 part of Laurel rock,
 especially these layers:
 8 inches
 11 inches
 10 inches
 8 inches
 16 inches
 8 in
 8 in
 8 in

711
 72
 639

Level of Clinton directly south of
 Jefferson town. = 639 ft.

Concord Ky.

Clinton base.

48 ft Upper Richmond, lower
part, fossiliferous, thin
It of this is Saluda?

54 ft Middle Richmond, 37 ft.

lower part of Richmond

47 ft. Lower Richmond bed.

152 ft = 50 ft Richmond bed.

5 ft. Lower Richmond bed.

6 1/2 ft. Lower Richmond bed.

36 1/2 ft. Lower Richmond bed.

412. Gatchell & Sons.
1 square west of Gatchell Station

Clinton base.

ve Saluda
fossiliferous Saluda

Upper part of Saluda

Lower part of Saluda

Lower part of Saluda

Lower part of Saluda

Lower part of Saluda

Lower part of Saluda

Lower part of Saluda

Lower part of Saluda

CACANA

Concord Hy.

Clinton base.

45 ft Upper Richmond. Lower part fossiliferous, then all of this is Caluda.

57 ft Middle Richmond. 57 ft.

Horizontal in rock.

47 ft. Lower Richmond.

152 ft = Total Richmond.

5 ft down to top of Richmond.

6 ft down to top of Richmond is Richmond bed.

36 ft down to top of Richmond is Richmond bed.

412. Gatchell & Sons.
1 square west of Jackson Station.

Clinton. 1st.

124 ft. Richmond.
32" Massive Sanda
23" Mottled Sanda
10 1/2" Fossiliferous bed of Richmond.
10 6" Staph. layer
5" Graptolite. Large Graptolite.
Fossiliferous bed.
36 6" Graptolite. Lower Richmond.
10 6" Graptolite.
86" Richmond bed of Richmond.
280" Graptolite. Richmond.

Harriet's creek. From Prachin
bridge 200 yds north to first
hill north, south of road bridge.
Prachin bridge.

20 ft. N. of road, well,
Limestone, sandstone, partly of red
(near top).

Upper Oxford clay, with diamond interbedded
Calcareous sandstone. Arthur's Pass

3° 6'' - Zeph. ...
Diplommatina, Atriplex other species.
Mysid Crustaceans very small. Dactylopusia, Eucalypt-
tostridium, Leptocera, Urogonostoma, etc.

6 ft. exposed limestone. Lower foot is
more clay in nature. Contains
Heterozonites at lower third division.

2007 541 { 9 ft clay clay rock, massive like)
speckling.
3 ft. Driftly purplish clay
8 ft 6 in. Clay rock. } 100 ft clay

Florida Heights,

60 ft from base of quarry to first out-
crop of Devonian limestone, but
top 5 ft of this section is not
exposed. 55 ft up - *Conchidium*
many species, also *Calymene*,
Halyssites, *Calymene*.

Roche more massive than in case
of Laurel, White clay at top is residual
clay due to decay of limestone.

16 ft from base of quarry to R R level,
where 8 ft of this belongs to Louisville, and
R R level = 439 8 ft - was down
according to Freeman,

Photo. 5,

Sonne zu Mittag.

515 → 2) common crabs.

8 1/2 NT will expand

15 A upper quarry rock, better bedded & makes better building rock.

36 1/2 ft lower on main air gun array,
used for crushed rocks for
road material

8 ft. too soft for road material.

Blue crop of me a day and
= Walden.

Anchorage July 9, '06,

1) 19 ft below Tracy's will again is Permian
 limestone chert. Plenty of corals
 within 5 feet or so. = 672 ft above sea

2) S. Von Almen, Eastward in the creek,
 near Henderson's, south of road
 leading east from Tracy's Bl.
 Limestone contains with Permian
 some layers of large corals,
 = corals? up to level of limestone
 = 720 at least. Permian not
 seen at all.

3) Dr. Robert Cornell, quarry.
 1/3 mile East of County line and
 1 mi west of Pierre Valley, 1 mile
 north of Tracy's.

Lower Limestone l.
 Malaga Bay.
 Upper Limestone l. is garnished with
 well bedded layers.

4) Tracy's Bl. Base of Malaga
 clay = 740 ft.

5) Continuation at 670 on Brimstone
 from east of Pierre Valley, Fork of
 Hancock creek.

6) West of Pierre valley, branch of
 Hancock creek.
 Top of upper exposed layer = 674, this
 indicates bottom at 644 about.

7) On road from Wilmington to Black Bridge
 Base of Limestone 562. This is 130 ft below
 corner 691 in County line and the
 Silurian section:

60	Yarn	12
12	Gravel	43
43	Gravel	30
30	Gravel	647
562	Gravel	
43	Gravel	
30	Gravel	
145	Gravel	

Silurian top should be not over 697
 or 700 but no number of feet Silurian
 was found at Tracy's Bl. & possibly
 Ironville is not 60 ft thick here.

Water level of creek at bridge is about 470
 Bridge level is 485.
 15 ft from water level to top of
 Silurian from near base of
 Pierre valley. In this case look
 like pyroclastic. Limestone found at
 10 ft below this level on 5 ft above
 creek. Plenty of middle Silurian
 rubble in this clay banks and also
 in but not in bed.

Columnaria at 485
 Base of Chert at 562
 475 - Col. 77 ft in tunnel.
 87

Barnstable July

12) Deseronto about 400 ft. N. of
N.W. of town in Appleton
Deseronto police.
Barn 5. 1740 ft. 100 ft. in height
722 ft. 100 ft. in height
with base about 30 ft. in
diameter. The top of the hill is
level. The hill is in the
center of the town.

12 ft Slender *Strophomena* *Strophomena*
 and *Strophomena*, not well exposed
 or as to the *Strophomena* *Strophomena*
 but *Strophomena* *Strophomena* *Strophomena*.

8 1/2 ft *Strophomena* base of *Strophomena* *Strophomena*
Strophomena *Strophomena* *Strophomena*.

9 ft *Strophomena* *Strophomena* *Strophomena* *Strophomena*
Strophomena.

8 ft *Strophomena* *Strophomena* *Strophomena* *Strophomena*

17 ft *Strophomena* *Strophomena* *Strophomena* *Strophomena*
 by the *Strophomena* *Strophomena*, *Strophomena*
 base of this rock is at crossing of
 creek = 102 1/2 ft below *Strophomena*
 base. *Strophomena* *Strophomena* *Strophomena*
 occurs above top of *Strophomena*
Strophomena. The large *Strophomena* a
 occurs 5 ft above base. *Strophomena*
Strophomena *Strophomena* *Strophomena*.

8 1/2 ft
 1 1/2 ft
 10 ft

Strophomena *Strophomena* *Strophomena* *Strophomena*
Strophomena *Strophomena* *Strophomena* *Strophomena*
Strophomena, about 18 or 19 ft above
 base of the *Strophomena*. *Strophomena*
Strophomena *Strophomena* *Strophomena* *Strophomena*
Strophomena.

15) *Strophomena* *Strophomena* *Strophomena* *Strophomena*
 an *Strophomena* *Strophomena* at 70 1/2 ft
Strophomena *Strophomena* *Strophomena* 17 1/2 ft
 about. *Strophomena* *Strophomena* *Strophomena*
Strophomena *Strophomena* *Strophomena*.

16) 2 miles S E of S by light

740 *Strophomena* *Strophomena* *Strophomena* = within 1/2 ft

719 1/2 = base of *Strophomena* *Strophomena* *Strophomena*

43 ft = *Strophomena* *Strophomena* *Strophomena*

3 ft = *Strophomena* *Strophomena* *Strophomena* 10

5 ft 4 in = *Strophomena* *Strophomena* *Strophomena*

16 1/2 ft = *Strophomena* *Strophomena* *Strophomena* 719

12 in = *Strophomena* *Strophomena* *Strophomena* 71

22 in = *Strophomena* *Strophomena* *Strophomena* 647

18 in = *Strophomena* *Strophomena* *Strophomena*

72 791
 82

17) *Strophomena* *Strophomena* *Strophomena*

base of *Strophomena* = 719.

15 ft of *Strophomena* *Strophomena* *Strophomena* 732

Strophomena *Strophomena* *Strophomena* up to 740.

Strophomena *Strophomena* *Strophomena* 647

Strophomena *Strophomena* *Strophomena* 646 about.

Strophomena *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

18) *Strophomena* *Strophomena* *Strophomena*

767 *Strophomena* *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

Strophomena *Strophomena* *Strophomena* *Strophomena*

13
 13
 71
 97

- 21) $\frac{1}{4}$ mi west of Skyles Ferry.
Dormican chert abundant.

- Smith of Douglas creek, Aug 1882.
 6562 common shrub,
 underlying *Gnaphalium* sp.
 at least 16" and possibly 20
 ft thick.
Gnaphalium sp. var. *puberulum*
 Stokes and Strunk, 1 inch
 calyxes, finely striated. This species
 appears common in lower 15 ft of
Gnaphalium strunkii.

- 26, South side of Sinking Fork, Along road.

- 665 ← 15 ft 20 m. in diameter, Corals
5 1/2 feet in diameter, Corals,
11 ft Massive brownish with red
22 ft As above, brownish
27 ft Greenish brownish

- 666 Low about 12 ft further up,
63 ft lower than about level of road
607 Top of Madison
Glacial pebbles quite common

- 28.) On Wolford road
654 *Deronimia* sp.

- 29) Near north end of Wingfield road

- 566 Top of Walden on Aug. 1902
5472 1st Sp. on the 1st of Aug.
530 2nd Sp. on the 1st of Aug.

30) Going up land along road, West of Graham,
Gibbsville, Penna. granitic gneiss,

31) Immediately above - Dev. chert with fossils.
645 1/2 Devonian limestone with corals,
642 1/2 Silurian limestone with
Stromatolites 1 inch or less.
608 Limestone layers very fossiliferous.
The Waldron is as much as 25 feet
above the Devonian limestone.
The thickness of this neighborhood
is 63 ft thick.

32) SW of Graham 1/3 mile,
678 Devonian limestone with fossils
& Stromatolites. The
crinoid layers may be beneath.

33) 1 1/2 miles SW of Graham.
643 Devonian chert, corals, abundant.

34) Going up land south of Pond creek,
642 Devonian corals chert.
622 Limestone with Stromatolites
Also Devonian in situ at 642 and
Plenty of Devonian chert down to
630. Not many leaves of fossils.

35) Just before reaching road corner 647
2 1/2 miles S. with road of Graham.

635 Limestone with Dev. corals.
640 Limestone with Dev. brachiopods.

~~Prospect~~

36) 1 1/4 miles NE of Prospect
598 Devonian limestone with plenty of
Devonian corals.

37) 1 1/2 miles NE of Prospect.
628 Dev. limestone with corals.

38) 1/3 mile SW of Road corner 647
614 Silurian limestone with Stromatolites.

39)
637 Dev. chert with corals. 578
44 1/2 Limestone 1
15 ft Waldron = 578 at base. 578

40)
620 Dev. limestone with plenty of fossils
resting on Limestone. Limestone
578 Top of Waldron.
Thickness of Limestone 42 ft

578
44 1/2
44 1/2

41) One mile SE of Harrodsburg
 650 at top
 Dev. 50 ft. ... shells abundant.
 16 ft. ...
 Dev. ... with ...
 5 ft. ...
 ... abundant.
 5 ft. ...
 ... abundant ...
 ...
 ... at about 620
 ... at least 57 ft thick.

42) S. 1/2 E. of corner 647.
 Dev. ... with ...
 593 Top of ...

43) NW of bridge 494 on River Road near Harrodsburg
 Top of Waldron at 555

44) Near road corner just west of Harrods G. River Road
 483 base of ... 3 ft thick
 just below road corner.

45) East of bridge Harrods G. River Road
 586 Base of Waldron clay.

46) 1/4 mi W of Harrods Creek. River Road.
 552 Top of Waldron clay.
 549 = about base of Waldron.

47) Half a mile West of Harrods G. River Road
 590 Base of Dev. limestone = ...
 of large corals.
 about 43 ft = ...

48) Waldron 14 ft thick,
 518 Base of Waldron.
 532 Top of ...

518
 21
 499

620
 57
 563
 15
 548
 21
 527

Jeffersonville, Tenn.

49) 2 miles SE of Jeffersonville, Tenn.

686 Clinton bed. Very conoidal

50)

683 Clinton base.
Lower exposed clay. Exposed Clinton

51) Between Buzza & Shanks Branch,

689 Clinton base

618 Columnaria abreviata? abundant

612 Calapocia

611 Columnaria calycina

52)

Traces of Hitz layer, but not of the Clinton
No Clinton seen for last mile,

53)

664 Top of main creek bed, abreviata?
4 ft lower Calapocia & Columnaria
1/2 ft lower Strophomena mediana
Calycina layer is lower still

54)

575 Rhyndrogonia dentata
Leptæna alpestris
Platystrophia lyonsi

675/9

55)

527 Leptæna alpestris
Platystrophia lyonsi
Dinorthis with some excellent spec.

56)

588 Immense masses of Calycina,
some 2 ft wide and 1 ft thick

546 1/2 Upper Columnaria abreviata?
layer. corals large 1 ft and
abundant

598 Strophomena layers abundant.
Strophomena reticulata & Strophomena
assum.

619 Fossils abundant up to the level.
Farther up they are more scattered

57)

2 ft 4 in salmon brown Clinton

3 ft basal Niagara

W 18 1/2 ft } Lower exposed clay 2 ft farther
N 15 ft } 18 in. no fossils
15 ft clay

2 ft exposed Clinton
2 ft 9 in upper exposed clay

677 Top of upper exposed clay
The bed is brown. Clipping
down all along the road.
which had been seen at
dead level. Crossed place of
lower exposed clay. Gd as far as in
Tennessee known till from exposed.

58) About 2 1/2 miles S of Jefferson
West of Chertville

Osgood limestone
Lower Osgood clay

2 1/2 ft basal Niagara

648 -> Clinton, of regular type,
Htz marked bed present,

59) About

2 ft 6 in basal Niagara

6 in Clinton Zaphrentis, Lingulid form,

Htz bed,

17 1/2 ft lower Osgood

5 ft Osgood limestone

2 ft 9 in upper Osgood clay

680 - 3 1/2 ft interval

= 648 ft for Clinton base

60) School house, 1 1/2 miles West of
Seatonville

651 = base of Osgood limestone

17 1/2 ft thick lower Osgood clay lower

633 1/2 = top of basal Niagara

Osgood limestone quarried
here

630 = base of Clinton

-642

61) upper Osgood clay,
Osgood limestone,
Lower Osgood clay

3 ft basal Niagara

2 1/2 ft Salmon brown Clinton - about 612

62)

632 = top of Osgood limestone

604 1/2 = Clinton base therefore

63)

2 ft up to Clinton base

23 ft up = sandy stuff down to 642

39 ft up = solid limestone - up to 619?

23 ft up = up to 580?

5 ft up small Columnaria halli

Large Calymene 2 ft across

3 1/2 ft up to top of basal Niagara

19 ft interval up to gate = 660 correct

as far as
level of road
goes

660 = gate 641 = top of Osgood limestone

3 1/2 ft Osgood l. base at 637 1/2

18 ft Osgood clay lower

5 ft (5 ft Clinton basal Niag. not exposed)

62 ft interval

Columnaria layeri halli

5 ft interval

large Calymene 2 ft across

Only Calymene Clinton
Carboniferous
28.11

64)

599 Clinton base,
66 ft up to base of Clinton.
7½ ft up to Schenectady layer,
Columnaria calymene.

65)

633 Top of 60 yds. limestone.
5 ft. Esopus limestone.
60 yds. clay layer,
Clinton, all over horizon.

AA)

all additional
Michigan roads

Clinton base
21 in. Schenectady shale
50 ft. to base of Schenectady shale.
110 ft. to top of great coral reef,
9 in. heavy limestone lowest part
13½ ft. upper part of heavy limestone
Schenectady shale
7½ ft. up to layer with Schenectady
26½ to top of clay rock top of Schenectady
Dinorthis relicosa layer good.

Jeffersonian

66)

18 Clinton base

East along RR is Rafinesquina alternata.
below medium size, Calymene
Billingsley form, medium size, and
Hedleya alternata, in City bed.

Photo. 1. Quarry east of Tuley, Lower
Laural, above the lowest horizon.
See former notes.

Photos, 2, 3. Osage formation at
overhead bridge about 1½ miles
east of Jefferson town.

Photo. 4. Same as last but showing
side of upper clay towards
the west with very oblique almost
vertical of small plane.

Photo 5. Florida Heights Limestone, 4 PM.

Photo 6. Walden Clay, east of quarry
east of Jefferson.

[illegible]

Plots 1, 2. I arrived here in
morning 1 1/2 east of Anadama.
In this quarry the top 17 ft.
= building rock. Then comes
rougher rock and chert, the
crushed rock = about 13 ft.
At base is better bedded stone
= good building rock.

12
2. 7
4
8

Long City

Barrow's

67)

2 ft Barrow's
20 in Clinton salmon brown.
673 - base of Clinton.
About 15 ft above level of
main river is large columnar
layer with sandy
very full of fossils beneath.
These fossils include Stroph-
tomena mediana com-
mon and one Par. area,

Large Trilobites occur along
the Clinton and
Barrow

68) S E of Barrow's 3/4 mile,

686 Base of Clinton from Clinton

69)

Silurian to very top but a
few more of Silurian fossils
which must have dropped in
unusually short distance. Therefore
this would have been much more
than few miles. The Silurian
which is common up to the
top.

750 Base of the Clinton - top of bed 78

70

NE of Barrow's river.

5 1/2 ft Gypsum chert above this level,
13 ft Limestone with Vent. section,
which would not have dropped
16 1/2 ft to base of exposure of Gypsum
9 1/2 ft from road to base of Gypsum.

71)

646 Base of Clinton

72) SW of Barrow's river, W side of creek,

635 Base of Clinton
Clinton = 2 ft 4 in
Barrow's = 3 ft 1 in

73

654 Top of Bedford Clinton

74)

720 Devonian chert, enals +
gypsum.

Striped from July 19, 1901.
Shepherdsville, Ky.

- 1) Walden Clay
Cox Quarry. 1 1/2 mi. East of Anchorage
- 2) Upper Limestone 0-17 ft. below Walden
Cox Quarry 1 1/2 miles East of Anchorage
- 3) Clinton #67 Shale, 1 1/2 miles N.W. of Beards
- 4) Louisville Limestone Building
Lodge. 8-23 ft. below Devonian
Flint Hill Heights quarry.
- 5) Louisville Limestone, Road
ballast, 23-60 ft. below
Devonian. Flint Hill Heights,

Different from July 21,

- 6) Limestone, upper 13 ft. 1 1/2 mile E of
different from, at overhead bridge
- 7) Limestone 5 ft. N.W. of
Seatonsville.
- 8) Limestone, upper 13 ft. North of Seatonsville
- 9) Lower Limestone, quarry 1/4 mi. East
of Tinsack
- 10) Upper Limestone clay, above Lexington
Limestone.
- 11) Lexington Limestone, La Grange

Shepherdsville, Ky.

75) West of Floyd's fork.
473 ft. top of Limestone exposed. Haly
sites, Murchisonia & very small. Limestone
to 500 ft. level. 50 ft. more extends
down to 444 = 29 ft.

76) East of Floyd's fork, as far as
known of J. De Troyer. Same rock.

77) At crest of road, road, road, road, road
collected. Photograph.

78) Back of house in town. R. G. B.
Louisville Limestone with Limestone
numerous fossils, in upper
part. At 500 ft level. No Devonian
seen.

79) West of G. W. Peacock.
Louisville Limestone with Limestone
numerous fossils, in upper
part. Collected.

80) "Bomehart's" home.
Silurian up to this level. Limestone
strongly west.

81) Limestone assumed to be Silurian

82) Pleasant Grove school house.
Limestone assumed to be Silurian.
Bomehart's 577 ft. level. Limestone
runs above this.

83) Silurian up to 600 ft level.

84

Pleasant Grove Church, Silurian at 580 Tyellia,
 South of Pleasant Grove Church,
 Waldron 19' 2 ft.
 Top of Waldron = 532 ft.
 Brainerd = 48 ft at least accord-
 ing to this,

86) Ridge way Ford (Dotted Fair)

16 1/2 ft Waldron clay.
 47 1/2 ft Laurel limestone
 21 in clay shale. Upper beyond clay
 7 1/2 ft limestone getting clayey
 toward base, exposed limestone.

87) Silurian limestone. J. A. Prigg.
 road corner.

88) Strombodes fairly well preserved.
 Tyellia in chert bands.

89 Silurian up to 640 at least.

90 William Elliger, Silurian.

91) From 617 to 631 = 14 ft clayey
 possibly Waldron but too
 poorly exposed for certainty.

92) Good exposure of Waldron here
 from 614 up.

93) 631 = base of Waldron

94) Oscar Green
 640 = base of Waldron

95) 648, base of Waldron

96) 662 base of Waldron

97) 26 in. Upper beyond clay.
 619 = top of beyond limestone
 6 ft beyond limestone
 about 20 ft beyond clay well exposed

98) Upper beyond clay, full exposure
 beyond limestone. Top 640
 Lower beyond clay

99) Good exposure

630

617

13

617

612

617

57

617

617

617

617

617

617

West Washington

100) 670 base of Ogford limestone.

101) 707 = top of Ogford limestone

102) 719 = top of Ogford limestone

103) In front of house

The Ogford limestone and
Grove Ogford clay are well exposed,
11 ft below road level top of 25 ft. = 702
691 = top of Ogford limestone

104. Ogford limestone. solid 1 ft.
Ogford limestone all weathered 1 ft.
Ogford limestone 4 ft massive.
Ogford clay lower 22 ft. Cedar glade

662 = top of clay
2 ft. sandstone
3 ft. Clinton limestone

105) 684 Clinton top, 2 ft. below house,

106) 690 = top of Clinton limestone

107

Base of fossiliferous section.
615 = top of pseudo-Madisonian = 27 ft
588 = base of pseudo-Madisonian
Modular clay rubble = 2 ft with layers
like pseudo-Madisonian rather sparse
ly scattered in it.

clay limestone 2 1/2 ft
clay shaly 3 ft

561 top of fossiliferous section
Interval of 3 ft. = Base of pseudo-Madisonian
Large platy. Lynx. Large goodish fish,
abundantly fossiliferous = 1 ft also containing
base of section.

{ Coarse irregularly bedded limestone = 2 ft 6 in
Interval of 3 ft. = Base of pseudo-Madisonian
Limestone large platy. Lynx
3 ft very irregularly bedded limestone
fossiliferous, few except in surface
of one layer near the top, 7 ft
very irregular section.

Ridged fossiliferous, 7 ft
Septarian top of limestone at which
Septarian common, platy shaly
shaly very much irregularly bedded
irregular as in long articulated
form which I can not distinguish.

14 ft interval poorly exposed, probably
all very fossiliferous and shaly
limestone stuff full of Septarian
and judging from section east
of Pipe branch of F. road creek
west of Fishville along R.R.
Does the Rhy. disconform occur in upper
part of this section?

108) Continued.

543 Dim. nitens retr. ossa horizon. mass.
crinoid with Septacum ribbed ridges.
Septacum column 10 ft from at
least.

Some Columnar fossils probably belong
between middle & New Richmond.

109)

720 = top of exposed limestone.

109)

Top of exposed limestone = 729

110)

705 = top of good exposed limestone
which is perfecting a columnar structure
with distinct thin shelled and
to top of exposed layers of Columnar
which give sharp limited layers
somewhat in other fossils above
the upper layers which are
mainly clay. 2 to 4 feet thick.
As good limestone 5 1/2 ft.

Thin bedded clay 2 5/8 ft.

Basal thin bedded 2 ft

Sandstone 3 ft

Cedar gl. 100 ft. of sandstone

Thin bedded clay 100 ft. long. 100 ft.

Thin bedded clay 100 ft. long. 100 ft.

Thin bedded clay 100 ft. long. 100 ft.

111)

38 in = Clinton. Cedar gl. 100 ft. of sandstone

112)

Thin bedded clay 100 ft. long. 100 ft.
Clay probably caused by disintegration of
this rock.

113)

642 Columnaria halli.

114)

Top bed at highest point where massive
Madison = 706. = near top of
massive Madison.

115

Madison massive.
Middle bed at 642 top of upper
Columnaria halli layer. Brown
large blocks about 5 ft across
brown - clay. Columnaria halli. No other
with clay base.
Top of Columnaria halli at 642.

116)

Creek bed = near base of pseudo-
Madison with characteristic
Columnaria abbreviata

117)

Large Platylux and numerous
Lygaxes. Good collection of ground.
but no Septacum. Partly, large Platylux
mixed with Columnaria at Madison
rock.

118)

612 = top of pseudo Madison
 628 1/2 = top of (upper?) columnar
 fossiliferous, clayey, massive
 crin. Battered to the upper
 layers.

119)

Upper part of massive Madison.

120)

columnar, alveolate lower pseudo
 Madison.
 14 ft interval.
 Fossils, hyaline etc.
 5 1/2 ft interval.
 653-5 ft. of fossiliferous layers.
 fossils of clay.
 643 1/2 cross-bedded layers,
 clay.
 Strongly cross-bedded layers in creek
 bottom. Main cracks at 632 1/2 as
 three phit. exposed at Mount
 Washington.
 Large flat layers common in 2 ft. down
 8 ft. up bed.
 Rough limestone but not this
 kind of cross-bedding.

121)

North of Olyds Fork
 628 = top of Lower Olyds clay

122)

North of Mt Washington
 617 = base of Clinton

Mount Washington

123)

face
 609 Saline brown earth, 2 1/2 ft.

124)

634 1/2 Saline brown Clinton base

125)

655 1/2 Saline brown Clinton base

126

NW of Tint
 670 = top of Olyds limestone,
 about 640 = Clinton base.

127)

West end of house
 640 = Clinton base

128.

Willie Eldridge
 5 1/2 ft. Olyds limestone, 2 ft 9 in upper Olyds clay,
 19 1/2 ft lower Olyds clay,
 1 ft thin basal Niagara
 8 in. Saline Clinton
 Clinton base = 628, 5

129) SW corner of Mt Washington
639 base of Clinton.
base of Niagara = 2 ft.
Clinton = 3 ft.

130) Mt Auburn Pl. Lyons limestone

131) Limestone with very strongly cross-bedded
full of large Pl. Lyons limestone
discontinuously bedded

132) At mouth of stream
Top of cross-bedded layers.

133) 485 - Rhynchotrema dentatum zone
but apparently not far from place.

639

521

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

5131

Next time

135) 3 ft upper exposed clay
629 - top of upper exposed clay.

136) exposed limestone
Lower exposed clay = 21 1/2 ft.
base of Niagara 3 ft
Clinton = 3 ft.
base of Clinton = 597 ft.

137) Top of Walden clay

138) Top of Walden clay, = 643

139) 627 - top of Walden clay.

140) upper exposed clay 2 ft 9 in.
base of upper exposed clay = 4 ft above
Cedar creek.

141) 583 - base of Walden clay.

142) Niagara chert. Gyllha Sir antedao

143) base of Clinton = 522 ft.
22 1/2 ft lower exposed clay 608 ft.
4 1/2 ft base of Niagara 28 ft.
3 ft transition. 16 ft 4 in. house
3 ft 6 in. Clinton. 3 ft 4 in. upper exposed clay
24 ft Walden clay. 5 1/2 ft second limestone

144

Silurian chert with Stromatolites,

145)

30 1/2 ft Laurel, apparently located at top,

146)

39 ft Louisville — 544

10 1/2 ft Laurel — 505

16 ft Madison Day — 479 1/2

24 ft Laurel.

Clinton base calculated at 394 ft.

147)

Silurian chert with Stromatolites at 569,

148)

4 mi W of Clinton,

682 = base of Madison

121)

Hazy Springs,

upper Oxford clay 3 ft

limestone 6 1/2 ft

149)

at base of NY River on branch
Base of Dickinson 475 Madison

150)

Base of Madison about 660

151)

Olden Creek, first at we creek occurs the
Madison clay apparently. Partly
exposed.

152)

Road corner,

Silurian chert with Stromatolites

153)

Church

685 = chert with Stromatolites
Calculate the distance of Louisville
between here and 151.

154)

690. Between here and 687 and 675
the land is flat like recent land
east of Shepherdsville.

155)

675. Madison exposed residual ma-
terial like that found from decay
of Dickinson limestone but no
Madisonian stone.

156)

662 Louisville with Halysites. No
good evidence of any part being
Dickinsonian residual material

157)

651 top of Louisville exposure chert &
limestone

(58)

115 Strongly bedded sandstone
Solid to most and immediately
below

159)

632 = top of Silurian chert with Strom-
atolites. One or two dark De-
vonian residues, probably, but
mostly above

160)

Silurian chert up to 640.

161)

Decayed material which may have been
Devonian at about 640.

162)

Flat plains like country from here eastward
+ south east.

163)

up to 660 Stromatolites with Silurian
chert.

164)

Volcanic debris like that called
possibly of Devonian origin.

165)

Rock in bed of Fern creek. If Middle
Age is here, it must be immediately
above since quarry is to at bridge
head.

166)

Lyellia in rock in situ.

167)

2 miles S of Newburg.
Silurian - up to 500, Crinoid stems
and Halysites, Lyellia.

168)

Silurian

169)

Silurian at about 540

170)

Silurian at 545 Stromatolites.

171)

Rather large quarry, some with Crinoid stems.

172)

Silurian chert up to 540

173)

Rather large quarry, 550

174)

Lyellia at 530

175)

Lyellia at 550.

176)

Silurian

177)

Silurian up to 495 and Grouse
in the grey in creek bottom. Calcu-
late thickness here.

178)

Grouseville down to creek bottom.

133)

West of Grouseville

5 1/3 14 widely fissile, fine grained clay rock, 2 or 3 layers.
1 1/2 ft from top. Leptæna at base.

Blatagite, cypher, common.

14 ft from above down to level with Pely-
chites in sandstone in S.W. This
is at entrance of main creek south
of shed into the creek, for crossing
to west side.

10 ft down to top of shaly, sand bedded
layers, with Leptæna, down as
far as Leptæna is seen at
base.

179)

Retrospect is seen at base
the Pelychites dentation
is seen here.

180)

100 yds N of Mr. Christ's house
Leptæna + Retrospect seen about 5 ft
more - some Pelychites
Pelychites dentation is seen in bed
above 1. Layer not seen with
with Leptæna. What is the place

182)

First horizon beyond and exactly
665 = top of massive Columnaria
helli layer, very large & 2 1/2 times
the layer below in the pseudo-Madison.

(600 = above base of pseudo-Madison.)

181)

Top of massive Columnaria heli
= 665 ft. Strophomena &
Stroph. reticulata occur extremely
abundantly.

183)

5 1/2 - top of massive limestone with
Leptæna above, at present west of
650 ft level on peak.

135)

Retrospect is found just below Columnaria
5 ft layer below whether in situ or
not is not known but should
not be impossible. It is found
just beneath the coarse layer with
Pelychites dentation 5 ft lower
down.
Retrospect is then seen apparently
5 ft above below Columnaria 5 ft
thick layer.

184)

588 = top of massive Columnaria
652 = Columnaria. Interval = 64 ft.

185)

2 ft 11 yds beyond shed
7 ft beyond Columnaria

186) N of Grinnell Ford

2 ft salmon Clinton

14 ft rest of mass. Madison - 600

19 1/2 massive Madison

up to base of massive Madison

25 1/2 ft { Striped, reddish immediately above,

{ *Strophomena halli*.

17 ft { more fossiliferous top of massive corals,

16 ft greenish Madison + in which layers.

33 1/2 { massive Madison, Heavy 18 in. largest top,

{ fossils in all layers.

8 ft { bluish clay and almost uniform.

11 ft, less fossiliferous above

{ platy above + other fossils, below

3 1/2 ft massive coarse limestone.

476 = base of coarse limestone.

changed badly to a clay rock in the

6 ft Coarse limestone lower part dis-

12 ft brown argill. clay

11 ft brown argill. clay in a few places

1 1/2 ft local Niagara

2 ft transition.

187

8 1/2 ft up to top of local Niagara.

544 = limit in

2 ft upper argill. clay

5 ft Coarse limestone and

Coarse clay lower

Jeffersonian

188) Silurian, quarry off the road.

189) Devonian at 620 crinoid l.

190) Silurian in situ up to 560

191) Strongly crinoid l. white at Summit, Silurids common, Upper Devonian. Black shale remains very scarce, at 540.

192) Black shale exposed by telephone, foot hill.

193) Black shale. Crinoid l. in contact at 525. Devonian limestone is ferruginous at very top.

194) Whitish limestone believed to be Devonian.

195) No exposure here

196) No black shale struck in well, only a rock said to be a blue ark, and thin limestone. white l.

197) Louisville up to 557. Quarry on Finches branch.

198) Contact of Coral Devonian with Louisville is well exposed at 511

199) No exposure since 198.

200) No exposure but limestone is struck 8 ft down. This must be Devonian since black shale occurs 1/2 mile down stream.

201) up to 510 Silurian in good sized quarry. No Devonian exposed.

202) Silurian exposure near creek level

204) No exposure

205) Devonian corals + graptolites at 470 in chert and in white limestone

206.

Southern Brick and Tile Co.
8 ft clay pit. Residual Devonian
clay containing chert clumps with
Martina subumbra. 6 1/2 million
bricks.

3 in to 12 inch tile.
618 Park Ave. Louisville, Ky.

207)

Silurian with *Hedysira* *lyellii*.
Strombodes up to 480 at least.

208)

Gravel up to 522. No good evi-
dence of any of it being Devonian
but doubtless lower. To me it seems
Silurian.

Farmers say no black slate struck
in wells, only limestone looked
above 540.

209)

Lyellia up to 520.

210)

Conclusive evidence of Devonian
position. *Strombodes* *lyellii* com-
mon up to 509 is just south
of Green Heart Cement.
No limestone in top of ridges in
wells.

211)

In this neighborhood no slate is struck
in wells on ridges.

212)

Barretts road N.W. of B. school.
Top of Silurian with *Hedysira* up to 485
overlain by Devonian corals and
graptolites.

213

Black slate in *Univ. of Louisville*
at 618. West of power house, near
house in south.

214)

665 - top of *Strombodes* with 11 ft
of *Strombodes* above. East of *Strombodes*
not present owing to weathering.

215)

601. top of *Strombodes* at 649. At very
northward dip.

216)

Lyellia up to 700.

217)

Quarry in Louisville L.

218)

Strombodes *lyellii* *Strombodes* at
about 710.

219)

Only Silurian material seen up to 720.

220)

Silurian up to 700

221)

Silurian up to 688 at least. Dev. little with *Shepherdia* with wide apart stipes.

222)

Chert at 682 considered Devonian but evidence is not clear, it may have dropped.

223)

Silurian up to 680 at least. Correlating chert can not be identified with confidence.

224)

Silurian up to 645. Stream enters cave here.

225)

Silurian to 650. Correlating chert can not be identified.

226)

Silurian to 620. Fine spring. *Sydrion*

227)

Devonian chert with corals.

228)

Stratigraphies in Louisville, Devonian contact with corals immediately above. Crinoidal limestone further up. No Black shale seen. Brown in Louisville tp, at about 575 not measured.

Middle town

229)

Silurian up to 710 at least. No evidence of Devonian between this and Middle town.

230)

Nothing but Silurian seen up to 665 at least, probably up to 680 at least.

231)

No evidence of anything except Silurian east of here as far as 229. Silurian at least up to 690.

232)

Only Silurian seen here. No Devonian as far as Middle town.

233)

No evidence of Devonian from this point NE.

234)

Devonian coral bed in creek bottom
at 580.

235)

Orinoida? top of Devonian limestone

236)

First black shale exposure at 565
Bed in Corniferous? Devonian l.

237)

Black shale brought up by telephone
poles

(238)

Chart ~~exposed~~ up to 575
Silurian Devonian (corals) contact
at 567.

239)

594 - Silurian contact to this level
also on the west corner, a few
large Devonian corals in the mixture
probably dropped.

240)

Chart age uncertain up to 615 at
least.

241)

Chart probably Silurian up to
652, may be Devonian above
but chart is wrong.

242)

Chart at top of road corner probably
Silurian.

Madison, Ind.



Rest not exposed.

28 ft Cliff rock of Devonian.

5 ft thin bedded sand.

3 ft 1 in. Upper capped clay Photos 3+4.

4 ft 4 in. Capped limestone.

3 ft Brown capped. Photos 5+6.

1 inch to 6 inches.

21 inches Clinton.

53 ft Me. down to top of Coral bed.

16 ft fossils, places but not many, few.

25 1/2 ft down to *Hebertella insculpta* rare.

3 1/2 ft below *Hebertella insculpta* to 345 level.

243) One mile east of Nottingham,
Shrubs, Pentamerus at road
corner, at least as high as 720

244)
686 = Spines in chert, also
corals.

245)
679 = Spines in chert,

246)
638 = Silurian with Pentamerus &
coral bed of Devonian, + graptolite
further up

247)
642 = Devonian Devonian con-
tact just up, Devonian chert
with corals abundant,
Silurian with Pentamerus

248)
Silurian up to 610 at least, as far
as I can make out from
contact with corals.
Base of Walden at about 565
judging from contact levels

249)
541 = base of Walden.

250)
Devonian coral bed in situ at 598
Silurian top = 5 ft lower with exposed,

251)
Devonian corals abundant at 598 at
turn of road.

252)
590 Devonian - Devonian coral contact
well exposed.

253)
590 Devonian coral chert
abundant.

254)
A very large coral 6 inches in
diameter in the 1st corner
order, at 585, near base of Devonian
coral bed which is at 583 about.
533 top of Walden clay = 50 ft for
Linnville bed very accurate. 520
515

255)
544 - Devonian corals in situ up
partially, what does this mean?

256)
573 - Devonian coral bed in contact
with Silurian. 15 ft of Devonian
exposed here. I believe this is the
first of its kind & below contact
bed I think.

257)
Orthopectes accumulation, large, coarse,
in Linnville creek near bridge.

258)

555 - Silurian, Clinton Co. N.Y. 12276
collected,

259)

592, Silurian with Stromatolites,
Devonian Chert above.

Fossils. 256,

Strophodonta concava J S

proplanica J S

Spirifer formica

Weyferia subcircularis

Orthoceras J S

Chonetes quadrilobatus

Pentamerella acuta

Meristella

Panoplia S

Platystrophia J S

37) old Shepherdsville

1 1/2 miles from Shepherdsville on
road to Cedar Grove Church.

Black shale in crinoid Compu-
rus

Limestone with Pontanous Hays

36) old

3 miles from Shepherdsville, along
creek below Lick Skillet.

Bull's Run = Miller's Run, old Mad-
ison road.
Madison clay
Cedar top of gravel 3 in

35) old

old Miller's Run, 1 mi from
Lick Skillet.

Comiferous = very white = 4 ft, possibly
20 ft, 20 ft, 20 ft, 20 ft, 20 ft,
Madison clay.

34) old

Cedar creek, 1/2 mile long and
Miller's Run = 1 mi of exposed clay, 18 ft, 18 ft, 18 ft,
banded with clay, 18 ft, 18 ft, 18 ft,
lower exposed clay.
Clinton 6 ft in cluddy, lower Madison
partly clay.

W of Shepherdsville section.

Saluda bed.

White water division of Rich-
mond, above Columnar bed,
1/4 mi. west of Pope Lock creek.

Upper part of pseudo-Madison
section of Hughesville bed,
1/4 mi. west of Shepherdsville,
1/2 mile west of Pope Lock
creek.

37) old Shepherdsville

1 1/2 miles from Shepherdsville on
road to Cedar Grove Church

Black shale in circular Corn
crops

Limestone with Pencil corals etc.

36) old

3 miles from Shepherdsville, along
Oakhill Lick Shale.

Bull's Run = Miller's Run, with the
highest road,
Walden clay
Cedar top of gravel 3 in

35) old

Walden's house, 1 mi from
Lick Shale.

Coniferous = very white = 4 ft, 2
inferred 20 ft, 2 others are
Walden clay.

34) old

Cedar creek, 1/2 mile beyond
Miller's house of Esqued clay, black
banded with red purple = 18 1/2 ft of
Walden Esqued clay.
Clinton 6 ft in cluddy, black
partly cherty.

W of Fishersville section

1. Saluda bed,

2. White water division of Rich-
mond, above Columnar bed,
1/4 mi. West of Pope Lick creek.

3. Upper part of Prender. Madison
section of Weynesville bed,
1 1/4 mi. West of Fishersville,
1/2 mi. West of Pope Lick
creek.

450 Shepherdsville.

- S - 60 turns

S. 17 E 170 Road R to Gettysburg Jct,

- - - E 210 Small stream.

At stream is D. L. Limestone on
top contact with black shales.
D. L. Limestone is 6 1/2 ft. exposed
on edge of ridge, perfectly exposed
3 ft. - Cement rock & small bed not
exposed.

- - - E - 50 turns,

N 80 E - 265 turns

N 30 E - 45 - creek, Buffalo Run.

At wagon, Limestone is 10 ft
1/2 exposed, at 465 above sea

- - - E - 94 turns

N 30 E 125 Niagara Limestone

N 30 E 129 at Henry C. Hamilton,
508 above sea. D. L. Limestone
by road side Limestone is
1/2 exposed, 1/2 covered.

N 30 E = 152 turns, Black St. Limestone,

N 80 E = 105 turns to contact.

512 ft above sea level, contact
Limestone is 1/2 exposed, 1/2 covered.
and 13 feet thick.

Fine grained limestone, possibly
ly - probably Niagara, 100 ft
5 1/2 ft lower down.

- - - E - 66 turns

N 75 E - 64 turns

N 50 E - 180 turns to E. Niagara
stone on top.

Niagara L. at 565 at Village under
stone.

N 50 E - 46 turns

- - - E - 38 turns

N 65 E - 50 turns, turn left to
Victory ridge road.

S. 10 E - 15 turns Lick & killed
stone.

S 35 E 15 turns Cedar Grove road turns
off here = 1/4 to Cedar
Grove church.

Road here turns off to right
up creek.

* S 75 E - 105

N 85 E - 65

N 50 E - 110

N - - - 37

N 75 E - 170 turns Basin of Walden
at 525 above sea.

- - - E John Osborn
45 turns creek nearly even

- - - E 18

S 70 E 85 road on left

S 40 E Walden clay 12 ft thick
101 turns to head of road

N 65 E - 245 to Cedar Grove
church on right.

Road straight ahead goes
to Schinide. About 5 or 6 miles
from Shepherdsville.

S 20 E - 100 turns

* S - - - 130 turns

S 50 E - 78 turns

S 20 E - 140 turns

S 80 E - 146 turns

SSE — 160 turns Amanda Bowman
— E — 83
SSE — 68 Probably Walden
here at 670 above sea

S70E — 97
SSE — 86
N20E — 50 to Walden here at
700 ft above sea level
N80E — 85
N35E — 110. Cor. l. crinoidal not exposed
but along road side as
road built across
Black slate hill by this line.

N75E — 55 turns
S80E — 26 turns
— E — 30 to road line of left
Bridgetown road. About
2 1/2 miles to Kirby Jones place.

S30E — 63
S — 60
S15E — 137 — at 695 Deer line
crinoidal, with black slate above,
Deer l. — 4 1/2 ft thick, all crinoidal,
S20W — 23 (stream Deer well
exposed. Fossils present at top
of this fauna.

S — 25
S35W — 40
S10W — 48
S10W — 58
S5W — 70 To top of May area
exposed at 735 above sea,
Deer l. not exposed here. May
be present. Fossils l. — 8 ft rests
on Walden clay.

S5W — 20
S45E — 20
S70E — 45

S35E — 44 Walden here at 720
S40E — 48 Road toward left
— note road, Goes to Solitude
road about 1 mi E of Kirby
Jones, close to creek west of
Solitude, 5 mi to Solitude.

S40E — 5
S10E — 103 to Cane Springs Sta
S10E — 60

S40E — 31
S40E — 32 = top of this layer
2 1/2 miles, good exposure photograph
1 1/2 miles, good exposure photograph
S20E — 100 creek both sides
S60W — 84
S80W — 23

R (S35W road to Deer Hill,
W — 145 turns, 720 above sea,
top of May area exposure, May
not be top of Deer l. May area
but seems that way
— W — 100
S40W — 105
N80W — 160
S55W — 40 turns Cane Springs station.

R S35W — 111
S10W — 230 to creek in country, Deer,
clay. here = 570
Walden well exposed near top
of hill at Kirby Jones, west of
Solitude.

S. N 5 E 45
 N 15 W — 55
 N 25 W — 70
 N 60 W — 15
 N 5 W — 90
 N 35 E — 24
 N 15 W — 30
 N — 55
 N 15 W — 50
 N 5 W — 75
 N 15 W — 52

N 15 W — 160
 N 15 E — 25
 N 75 E — 28
 N 15 W — 90
 N 55 W — 20
 N 45 W — 90

Refer to Fancy
 Dave G. Jones store,
 2 mi E of Cedar creek church
 1/2 mi from Kirby Jones.

N 30 E — 90
 N 5 E — 20
 N 10 E — 10 base of Clinton 690

N 10 E — 14 creek branch of Saluda
 20 ft massive Saluda
 N 25 E — 52 road to left

S 85 E — 70 top of 2nd limestone
 above clay above 1st Coy L.
 N 30 W — 35
 N 30 E — 210
 N 10 E — 20 Walden base 760 ft

N 10 E — 115 base of Clinton
 N 40 E — 60 base of Clinton
 stream flows across road
 with road so that Cedar
 stream begins at left side of
 road.

N 10 E — 20 road from left
 N 10 E — 42
 N 45 E — 30
 N 30 E — 65 road to left
 N 80 E — 166
 N 50 E — 55
 S 75 E — 50 Kirby Jones
 Valley runs east in south
 side of road from here

The creek east of Fancy runs
 into Cedar creek about 1 1/2 mi north,
 and then Cedar creek runs west
 and runs all above about 5
 miles farther on, about 6 or
 7 miles below Greenville
 Ford.
 - about 1/2 mi or 2 mi below
 Ridge way Ford

N 65 W — 300
 N 65 W — 122 Stone of
 C & Crenshaw
 N 65 W — 28
 N 65 W — 75
 N 65 W — 30
 N 60 W — 45 Road on left,
 N 85 W — 30
 N 70 W — 60
 N 85 W — 100
 N 45 W — 50
 N 70 W — 65 Road on R
 S 80 W — 20 Creek
 S 60 W — 40
 W — 30
 Cedar Grove Church,

300 Slate mill.

301 Black slate at 527 up this far at least.

302 at 480, may be Black slate here but if so, it is so badly weathered that the Black color is mostly in a few thin layers, Rest is light colored.

303 at 490 light colored soil may mean Wavaly.

304 Good Black slate exposure at 480.

305 at 495 Black slate top with phosphatic nodules 10 inches long at maximum.

38½ ft light blue clay Linnetts.
 Linnetts clay believed to extend at least 27½ ft farther up. Total of at least 65 ft.

306 Black slate top

307 Plenty of Black slate thus far west.

308 Exposures from between 307 and 308, at 308 it is bed of 466 and for some distance below 466 at least, Wavaly clay shows up. Whether slumped down or not I do not know.

309 Sawmill at 500.

308 Black slate top at 464 judging by phosphatic nodules at base of Linnetts clay 47/1000.

310 Linnetts clay in stream bottom.

- 311 White salt water used to be, 420
 312 Fine limestone clay exposure up to
 51 at least, Wm. W. W. W. W. W.
 313 At 457 There is black shale top with
 phosphatic nodules and layers
 314 No exposure since 313 and 315
 but here at 314 is Wm. W. W. W. W.
 rock with fine grained nodules
 in place and much sandstone
 rock Turned around here
 in creek bed, above 539 level
 = about 545,
 315 Now the rock is not even clay
 shaly rock with fine nodules.
 316 Wm. W. W. W. W. W. W. W. W. W.
 nodules, fine exposure on North
 side of river.
 317 Same Wm. W. W. W. W. W. W. W. W. W.
 with fine nodules, fine nodules
 very abundant 150 ft further on.
 318 Same rock as at 317.
 319 Limestone at about 550

Bridge

- 320 At 550 is top of Black shale with
 phosphatic nodules.
 321 Nothing but Wm. W. W. W. W. W. W. W. W. W.
 320.
 322 Wm. W. W. W. W. W. W. W. W. W.
 like Wm. W. W. W. W. W. W. W. W. W.
 fine nodules, but with
 fine nodules, but with
 fine nodules, but with

- 323 Black shale but top not clearly exposed,
 fully 10 ft exposed in bank,
 324 Limestone, top about 1 ft
 above R.R. grade.
 325 The same limestone with Stern-
 rat fossils may be followed
 up to here. No evidence of Dev.
 limestone.
 326 Limestone exposure abundant.
 327 Black shale the river up by very shallow
 road side ditch.
 328 Black shale down to creek level.

Shiptonville

- 329 Niagara limestone up to 482.
 Black shale at 493, but immediate
 just not exposed.
 330 Crinoidal Devonian limestone, 1 ft ex-
 posed. Thickness in bank
 = Crinoidal limestone, at 493
 Niagara top = 1 ft from above.
 331 Niagara limestone up to 490.
 332 Niagara limestone all way to next.
 333 Niagara limestone, at 498.
 334 Niagara limestone at 480
 335 Niagara limestone
 336 Niagara limestone up to 493.
 Brown fossiliferous limestone.
 337 Devonian limestone of Niagara
 Phacelops, spirifer, etc. etc.
 top in limestone, only some
 Niagara limestone, but thick-
 ness of limestone exposed contact with
 Black shale.

At 863 the rock is slightly cherty and at 871 it becomes more distinctly cherty.

Up to 887 from 871 there are somewhat fragments in crevices, but almost all of the rock consists of rock like upper wavy clay rocks badly cracked up into small fragments or large ones, where they weather out.

Collected from 830 to 860.

Going northward along ridge road from 986, the fossiliferous chert rises to 875. From 820 further S. = much of Smith.

Simmetine at 874. at 869 somewhat cherty, *Simmetina*.

Beneath this is upper wavy shaly clay rock.

Beneath this is the more solid fossiliferous like rock as on road east of Brooks from 850 down to 800 and down to 780, much less solid so that it weathers shaly, when dry, it appears but appears much more solid where freshly exposed.

Below this level the shaly clay wavy rock appears for a short way.

There are some small nodules of chert at 874. No

chert at 860. More chert down

to 840. A lot of fossiliferous

rock at 840. A lot of fossiliferous

rock at 840. A lot of fossiliferous

rock at 840. A lot of fossiliferous

still lower but no fossils are to be seen for measurement.

450 - No evidence of anything as low as *Simmetina* clay in creek bed at 473, = 1 1/2 mi. S. of Smith Park Sta.

From Coral Ridge along the road following east side of railroad, for 1/2 mile only, north from wavy above the *Simmetina* clay is shown. Part of this stretch as far as

451 there apparently is *Simmetina* clay but no fossils are seen.

452 - One & a half miles north west of Brooks shaly wavy just above *Simmetina* clay, or top of *Simmetina* clay. *Trematospira nodulosa* common in shaly clay.

Heard, R. S. *Simmetina* *tenax* where specimens on Brooks road were found. About 1/2 miles east of house 1/4 mi. N. of 520 on west side of track.

453 NE of Brook. Black slate & chert beneath.

454. Niagara l. with Halysites & chert above. Chert with *Lyellia*. Presence or absence of *Deronia* not determined, at 500.

455 Black slate in field at road side, at 524.

456 Black slate on coarse crystalline *Deronia* is exposed with *Silurian* with *Halysites*, 3 ft below chert bed of *Der.* with Black slate. Therefore *Deronia* is not more than 3 ft but may be thinner. Top of *Deronia* is at 493.

457 *Silurian* limestone but under exposed here. It is not known whether *Deronia* is present or absent here since Black slate is not seen.

due 11.15 to 2.00 p.m.
1.08 grey west
5.45 " "

2 + 3.50 O.M. Winchester.

Jan De Jarnatt
Sarah De Jarnette

35 - 35.5 miles E of Versailles - about 30 ft thin bedded sandy rock, upper 5 ft with layers 3-4 in thick.

West of house 67, just west of house where it is exposed during rain, *Strophomena* *lanceolata*.

At point 35 miles east of Versailles and for about distance west *Arthropoda* *medulla* is abundant above the *Strophomena* *lanceolata* horizon. The top of the horizon is marked by *Planorbis*.

The *Strophomena* *lanceolata* occurs a short distance west of *Strophomena* *lanceolata* and *Planorbis* *lanceolata* is abundant.

Fred Brumm. Brooklyn NY,
Allen.

Fordyce Knob. $1\frac{3}{4}$ mi S of Borden.
Top of hill.

- 20 ft. Chert, red soil, with spinifer 2 pieces
- 47 ft shaley
- 14 ft SS solid.
- 14 ft SS solid.
- 10 ft shaley
- 8 ft SS intermediate, but is massive
- 22 ft SS. massive.
- SS massive, with Derbya large
+ fairly abundant in one or
two layers.
- 35 ft Massive SS with large Derbya
+ various intervals.
- 24 ft weathering shaley. Probably a
underlying part originally all.
- 16 ft indurated argillaceous with
weathering shaley.
- 18 ft indurated clay rock with spinifer
and abundant Derbya.
Forks of road.

West of Borden. N of RR. High
end of hill.

- 31 ft massive SS.
- 132 + RR crossing to massive
interval of early stuff.

Dr. Stalkers farm.

McKinley Knob. $\frac{1}{4}$ mi SW of Borden.
Top of hill.

Chert. red soil. It all looks like.
Contact uncertain.

33 ft + shaley.

- 6 in SS solid.
- 11 ft shaley. + spinifer large area
- 10 ft massive SS. with Derbya at intervals.
- Derbya common tillage in all layers.
- 30 ft. large Derbya common at various
intervals.
- 35 ft Derbya common at various
intervals. Indurated argillaceous
freestone, weathering shaley at
various levels.
- 20 ft Derbya rather rare.
- 24 ft interval. indurated argillaceous
- 12 ft interval. shale
- 70 ft softer argillaceous material
- 22 ft down to crossing of road over
creek.
- 5 ft interval.

Hard rock layer in creek.

The stuff in the bank looks like
the stuff underlying the typical
Givins clay, which forms the
upper part of the New Providence
formation.

William M. Stone.

Curwood.

Limestone fossils 5 of bourn and
also 500 yds SW of East locality
in the road leading to Car-
wood. 2 Bazzards Road.

1 3/4 mi E of Borden, along road S of RR.
Lepidodendronid. 400 yds SW of Curwood.
3 1/2 in wide. originally 4 in wide.
15 in this long.

14 feet fossiliferous clay & mud.
1 ft limestone
14 ft clay shale. Fenestellids.
1 ft 3 in l. with Fenestellids.
14 ft shale.
top & in underlying clay shale at base
5 ft. limestone. Fenestellidae common
11 ft argillaceous rock, weathering shaly.
40 ft very cherty in places. Lower 10 ft with
argillaceous shaly coarse. upper part
massive. Cherty near top. Fenestellae common
5 1/2 ft argillaceous rock with l. at top.
6 ft massive limestone.
6 ft more or less argillaceous
Uncertain to a fault
along the line.
show in the fresh vertical exposure
large crinoid stems. The west

the tops of some layers are full of
the local Harrodsberg. Up a gully
23 1/2 ft limestone, closely similar to
2 ft limestone full of bluish cherty masses.
13 ft blue argillaceous rock weathering shaly.
The deposition was taken place here.
tail the faulting a strongly unconformable
somewhat cross-bedded.
abundant of crinoid heads. white l.
spots. fossils very scarce. Not even can
grained, crinoid, white, cherty in
29 ft Harrodsberg. coarse Harrodsberg

W E.
Pairwise
apparently an unconformable contact
belonging to the same series.
2 ft. More shaly than underlying rock, but be-
14 ft massive sandy rock, rather argillaceous^{SS}
with few crinoid stems & a few fossil brachiopods.
66 ft argillaceous indurated bluish
rock weathering shaly.

5 1/2 ft + argill. shale. Butter mounds
 231 1/2 ft up from Oliv' shale crust
 3 ft ss,
 127 ft.

101 1/2 ft up
 I - 4 ft Rhynchonella arvensis. Common.
 8 1/2 ft crinoids &c up to this level.

89 ft up
 2 to 3 1/2 ft H horizon. fossils few.

G another iron nodular layer.
 3 1/2 ft. fossils scarce
 iron nodules

5 ft up to another iron nodular layer.
 fossils scarce.

77 ft up ^{wp} First heavy iron nodular layer = F
 10 1/2 ft up. Fossils few.

E 1 ft up = 1 in l. = 66 1/2 ft up.
 5 ft up = two in l.

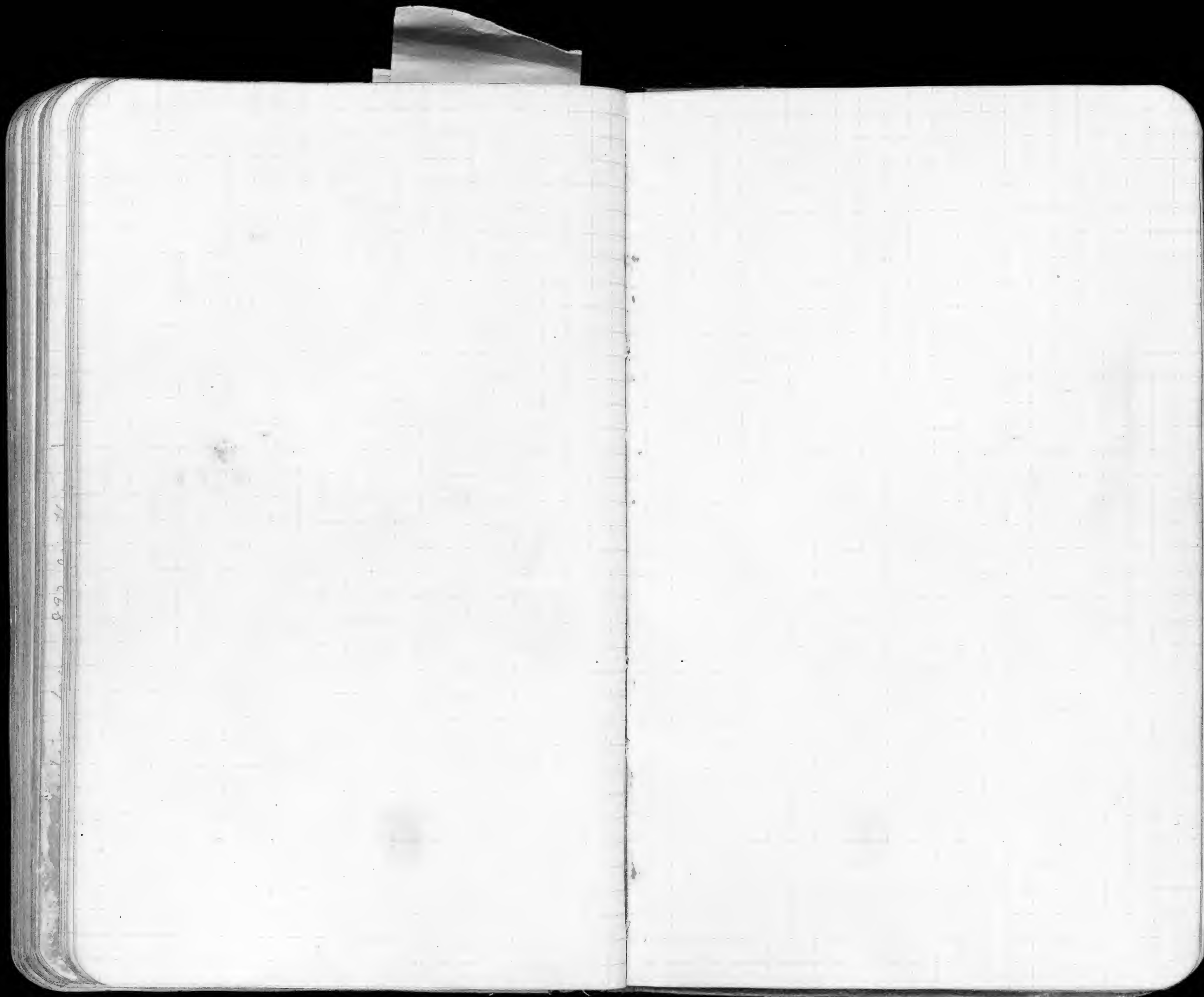
D Another limestone layer = 60 1/2 ft up.
 11 ft interval.

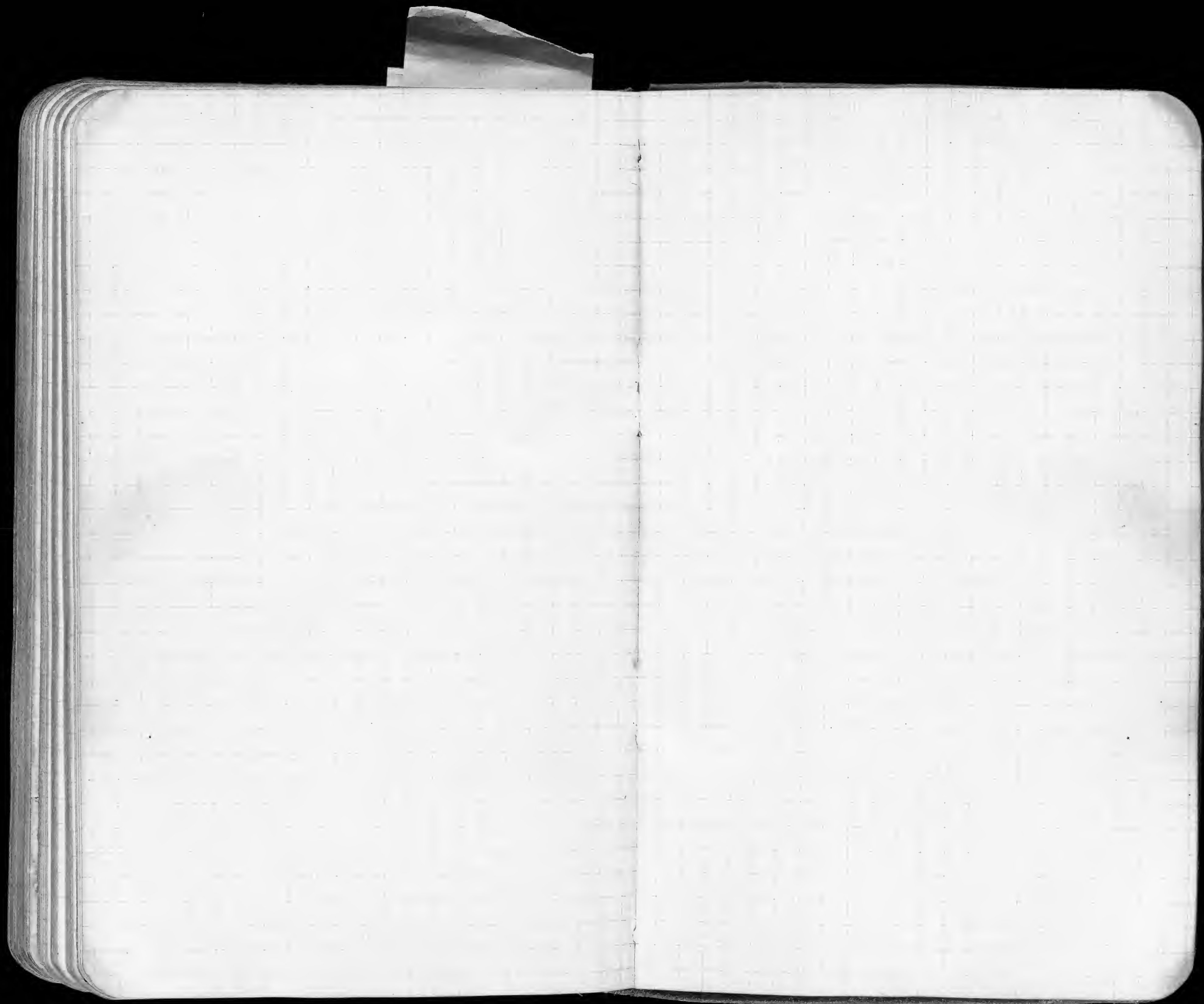
C 1/2 ft crinoidal limestone layer.
 5 ft up interval.

B-44 ft up = two inch crinoidal limestone to 6 in.
 23 1/2 ft black slate to bay side
 exposure.

B Chief Rhynch. arvensis horizon.
 B-C Rh. arvensis in this interval but not
 very common.
 D Chief ~~9~~ ~~9~~ horizon.

		127
		101
		228
	ss	
	218 1/2	
J	101 1/2	
I	97 1/2	
H	89	
G	85 1/2	
F	77	
E	66 1/2	
D	60 1/2	
C	49 1/2	
B	44	
C	44	
B	23 1/2	





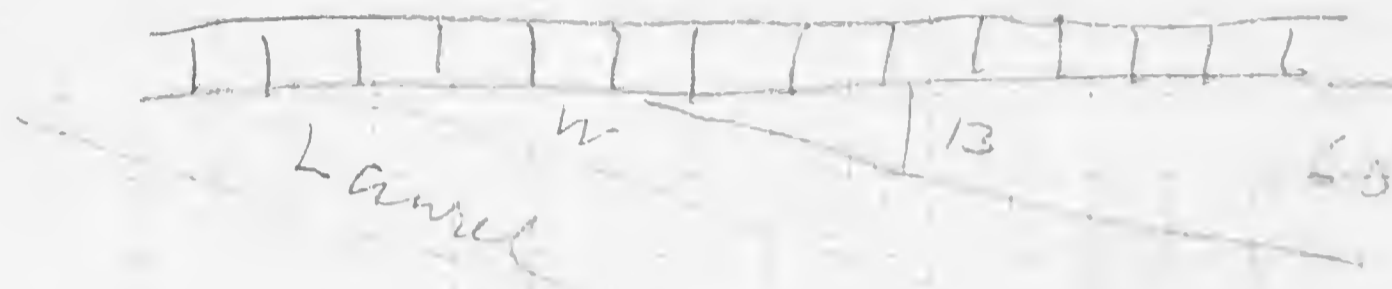
F. P. Hoover.

Blomfield, Ky.

590

483

107



Sonder, Harvey, take road to
Preachersville, at first lane on
this side of bridge turn left,
about 300 yds from pike to
house, on south side of lane.
Widow Jones lives there now.
"1 1/2 mi. from G. Oak. N of hill
toward Dix river. 300 yds from river.

St Paul, John, with clay Preachers
ville road turn off at school
house in N part of town,
cross the Dix river, at Hunter
Ford, about 1/2 mile beyond
the Ford, in Fall Dick road

Foley, Andrew, From Centre of
town go east end then
NE part the cemetery 200
to 300 yards, "1/2 mi from
centre of G. Oak in Fall Dick road,
Esperanza well, the one you can
drive up to before you reach
the bridge. - 1/2 mi section
1 mi from G. Oak on Lancaster
pike.

Field Well at Crab Orchard
Springs NW of Hotel 100 yds
"on lot of property of Crab Orchard
Springs"

Grove Well right across from
the office of Crab Orchard
Springs in the yard of the
property of Crab Orchard Springs,
Mr Caldwell.

Sulphur water at Barrens
Spring, well known on
Lancaster pike. Take next
turn off toward E along
lane, after passing the
school house.

Salt Sulphur Water.

Adams, A.
Crab Orchard Springs.

Barren Spring, 1/2 mi. from Crab
Orchard, on Lancaster Pike.

Howard Sulphur Well 1 1/2 mi.
from Crab Orchard on the Hot
Vermont road.

Bryants Spring near G. Oak.
in the valley. From Pas-
tore Spring, NW Sec 10
sulphur water. Many
deer a summer ago.

How to determine Sp gr. of limestone,
Other tests.

How to make use of boggy clay
for drainage.

How to recognize presence of boggy
clay.

Core drills rather than chisel drills
for testing. In core at test at
Tuckers - reported 70 ft to bottom.

Springs, impervious layers of
clay. Pits in clay residual
for watering animals.

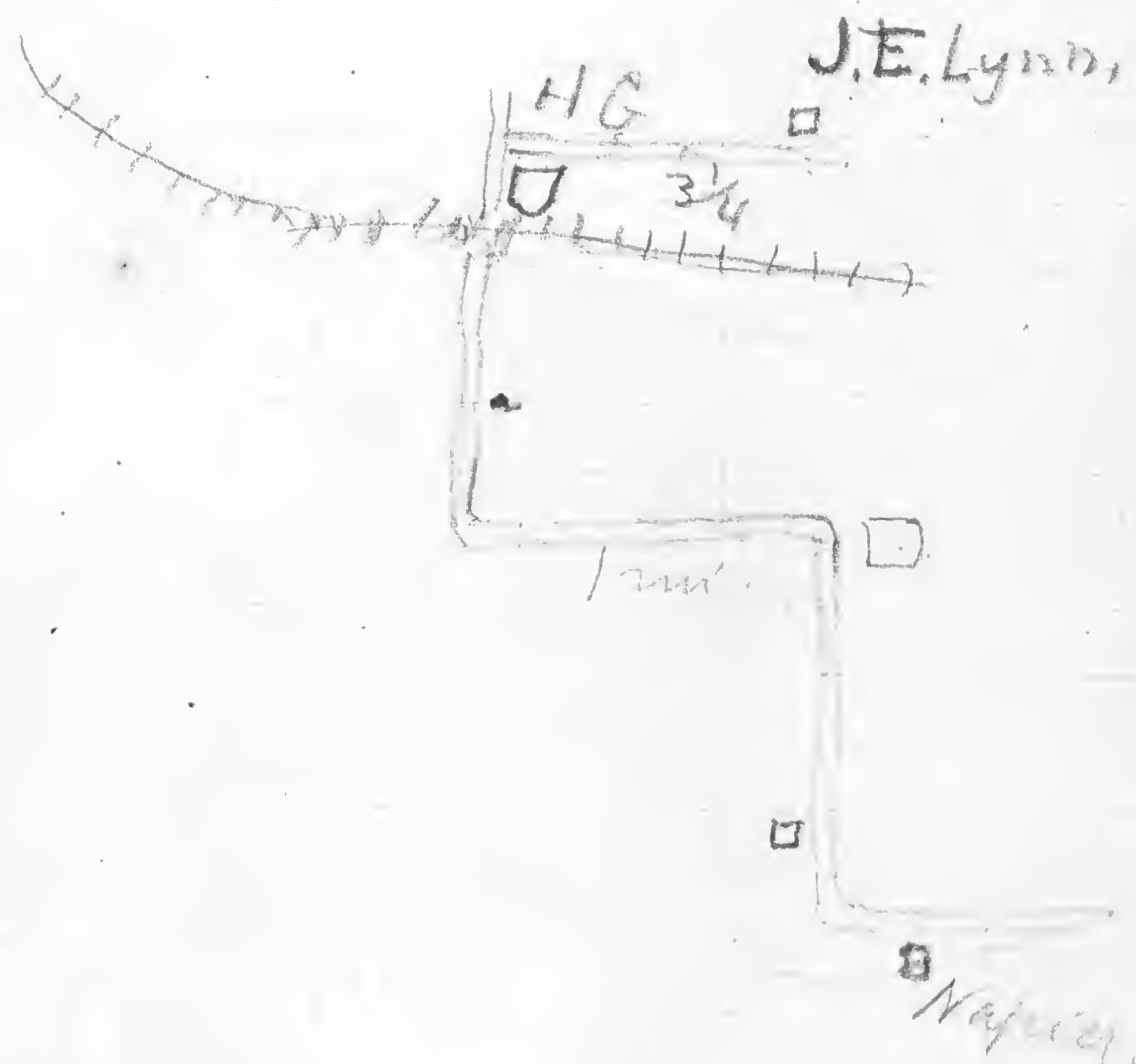
Strongly but which strata prove
large pieces of weathered rock. Other
wise there would have been frac-
turing instead of pitting. Strata
may not have been as much
eroded then as now. Delmar
ella Lemniscata form pitting
splendidly.

Cultivation of Cedar on glades & boggy
Purple color not found in Walden
therefore a distinguishing
feature of the boggy.

Southern origin of spruce and
many willows & birches.

Use of rocks useful in connection
with placing of wells and
creeperoles.

27 1/2 (per cent)



July 2 Monday S L 2 Jeffers not on.
 3 Tuesday B D S L 6
 4 Wednesday B L 8
 5 Thursday B S L 11
 6 Friday B 12

21 Monday S L 19 Thursday
 Dinner at Ting B S L 20 Friday
 Dinner at Louisville B S L 21 Saturday
 Rig West of Cedar Cr. $\frac{1}{2}$ B D S L 22 Sunday
 Rig East of Cedar Cr. $\frac{1}{4}$ B D S L 23 Monday
 Rig West of Cedar Cr. $\frac{1}{4}$ B D S L 24 Tuesday
 Boardman place B D S L 25 Wednesday
 W of McCulloch's Run B D 26

= whole week board
 2 1/2 days rig.

Greenville + Atlanta.

	P	a	P	a
Nicholas	7.18	11.00	2.27	6.55
Millers	7.54	11.38	1.48	6.14
Richmond	6.30	12.05	1.35	7.35 6.00
Panola	7.02	12.37	12.53	7.01
Swine	7.30	1.05	12.25	6.35
	a	P	a	

1) Epsom well J. E. Grave, Walled well at first. Drilled in holes afterwards down to 10 feet hole in down & opened it.

2) E. L. Butler owner (Jim Niblick)
East of pike, between road to left W & road to right E in Kiddville.
Dug well, filled up. Some found of water here, but no salt made.

1) J. E. Grave. Dug up some salts about 20 yrs ago. Made salts in a salt hole. Only well at Kiddville or vicinity where salts were made.

3) J. Harvey Boone, about 1 mi. SW. of Curry bridge. Nothing from about a well. He lived in the branch and using it to run a creek from the west.

4) Soda Springs is 75 yards west of the Oil Spring, in property of William Hule. would like to have chemical analysis, SW of Hotel

5) L. D. Stone, From Right angle go west $\frac{1}{2}$ mi. to fork of road. The Mt Sterling & M. V. R. R. then S on M. V. R. R. road. to first bend west. Stone lives just S. of this bend.

Chilton PO discontinued. Last year Pegg's Stand (store.)

Louisville Oil & Gas Syndicate.
W. W. Watts, Pres.
Louisville, Ky.

P. B. Wind, Winchester,
1480 ft. Oil Spring.

E. D. Veach Lexington.
A. S. Webb

Kidd, E. O.
Transylvania Co. Lexington

George Mc Intosh
The 7 ft Clay Layer in Plum Creek

Shaker,
Nearly opposite bicycle store

Cincinnati to Winchester	Th.	2.80
Winchester, L. B.	Th. Fr.	1.00
Winchester to Indian F.	Fr.	.40
Oil Spring dinner	Fr.	.50
Indian Fields to Clay City	Fr.	.25
Clay City, sup. L. B.	Fr. Sa	1.00
Big one day	Sa	3.00
Indian Fields d to d	Sa Su	2.00
Indian Fields to Lexington	Su	1.00

		8.95
Lexington, hotel, Monday	Su M	3.00
Lexington to Richmond	M	1.00
Bns	M	.25
Hotel G. Lyndon	M T	1.00
Richmond to Panola	Tu	.40
Dinner	Tu	.25
Panola to Irvine	Tu	.35
Irvine to Richmond	Tu	.70
Hotel G. Lyndon	Tu W	1.50
Bns	W	.25
Richmond to Mt. Airy + return	W	.35
Rice & dinner	W	1.50
Hotel G. Lyndon	W Th	1.50
Richmond to Williams	Th	.20
		21.20

Dinner G. or. H. Williams	Th	.25
Hotel G. Lyndon	Th F	1.50
Hack	F	.15
Richmond to Stamford	F	1.04
Hack	F	.15
Rice	F	1.50
Hotel St. Asaph Stamford	FS	1.00
Stamford to Lexington	S	1.45
		28.24

Sunday at Lebanon. Paid

Lodge (Thurs.)

	5.26	
1 Fri	1.9	
	4.6	
1 Sat	11.9	
Sunday		36.72

272 2.40
152

2.125; 3.5 11 54 2.1
22 8.3 108 (321
3.5 100 151

$$\begin{array}{r} 522 \\ 430 \\ \hline 952 \end{array}$$

72 477
 Limestone
 Duffin
 Limestone
 Phosphatic
 Great Clay
 Waco
 Estrell
 Perkins
 Plum creek
 Brassfield Paula
 ✓ Louisville upper
 ✓ Louisville lower
 Walden Clinton
 Laurel Clinton
 Asgood. Come Spgs. top of Asgood.
 Clinton Gasburg Bardston
 Ballard Gasburg Bardston

Bart Willis

Old Analyses in Shaler's
 former reports etc.
 + Analyses of wells in
 Boyle Co. & Clark Co.
 pgs. 119. pgs. 173 &c.
 pgs. 174.

Look up wells of Gamard &c
in old survey reports.

Indian Fields. Where did
J. Harry Boone live?
in saddle of Red River bridge 10 mi. out.

Whence sections
2186, 2187. analyzed by
Peters. 3 clays of Madison Co.

Indian Fields.

Black sulphur well.
L. D. Stone on road from
Kiddville to mouth of Red
River.

Where was the Soda spring
near Lubbe and creek?

Washington Co.
Where was Walt's Lick?
Made salt here.

Lebanon.

113 Where were the
Plantation Licks, 2 mi. NW of
Raywick.

56 Clay Licks 1 mi S of Raywick.
57 Able Spring 4 mi S of Leba-
non.

Between Boston and Bardston.

Thickness of Louisville bed
at Boston, 59

3/4 mi. E of Boston. 58

2 mi E of " 54. Devonian?

Devonian at 54 + 56.

Thickness of Botland at 56.

Between Boston + Balltown.

64. = 2 1/4 mi. E of Boston. Walden.

61. = Half way = Laurel.

74 = Laurel at Balltown.

Lower Laurel clay + limestone.

Come Springs section.

Gashburg section. Orgrad base.

Huntsville. Is Columnaria
abundant found here?

Crab Orchard. Location of following
springs:

Grove
Brown
Field
Howard
Epsom
Foley

Snyder
Bryant Chaley. Field
Valley sulphur
Knob sulphur
Stone's sulphur
Well.

Wanted. Correct location of
Wood lawn or Woodland and of
Needmore with reference to
Gasburg.

Dudderars mill in Dix river,
reached from Richmond junc-
tion (= Round and) In going there
Columnaris is crossed. ~~mountain~~
on map.

J.T. Lynn, about a mile from Hall's
gap station. Rock quarried here,
could be dressed with an axe.

East of Hall's Gap station 1 mi. on then. ~~Chesapeake~~ like in SE direction. Maywood
= Hall's Gap S.E.

James' Mill in Dix river. in
road to Procherville

Eppur well at Mr. J. E. Groves
Kiddville, in what bed was
this well opened?

Olympian Springs.

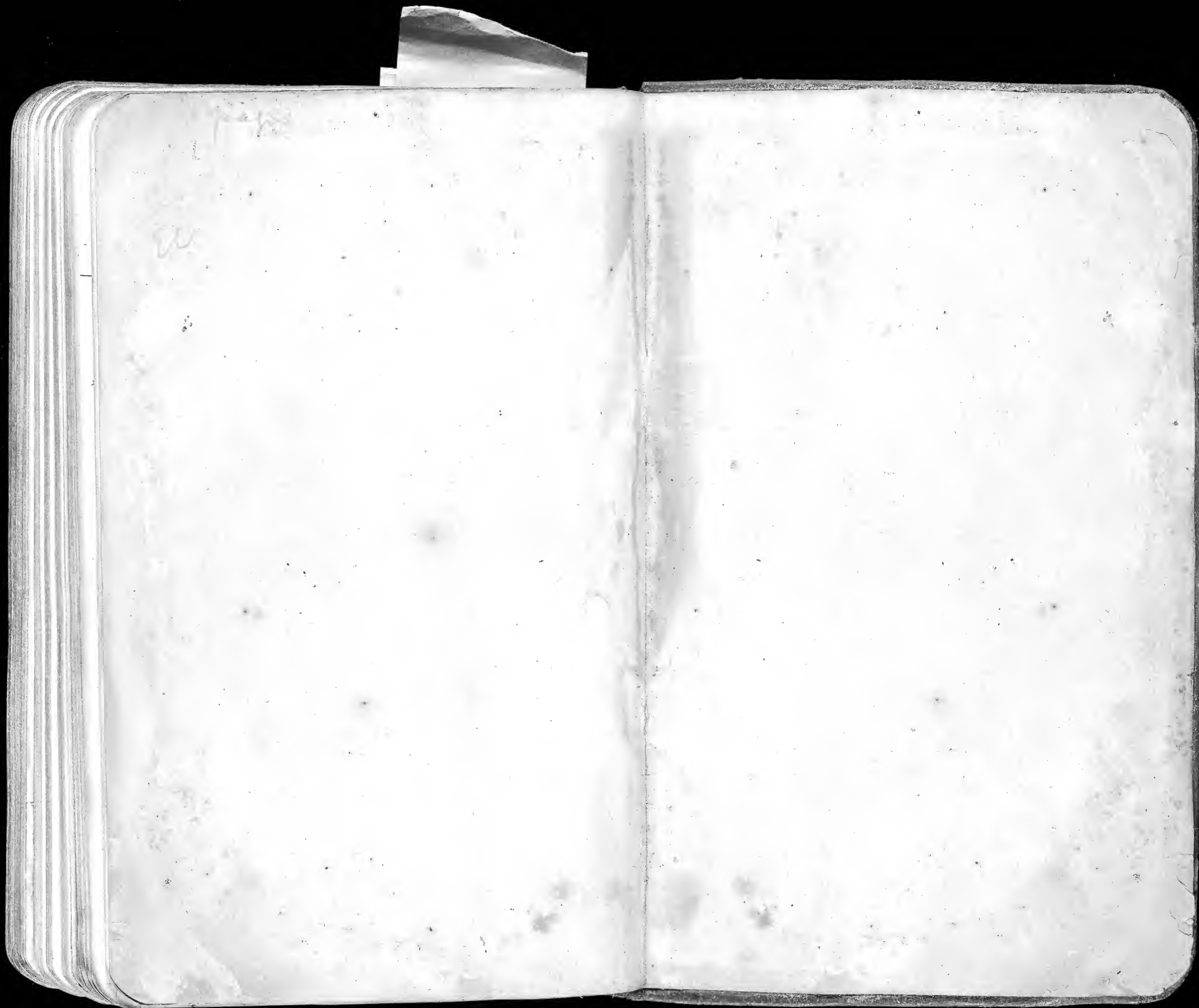
Coniferous? about 1/2 mi.
N. of main springs at
old Chalybeate Spring.

at ~~Procherville~~ G.D. Lock Paper
Hotel. Use water

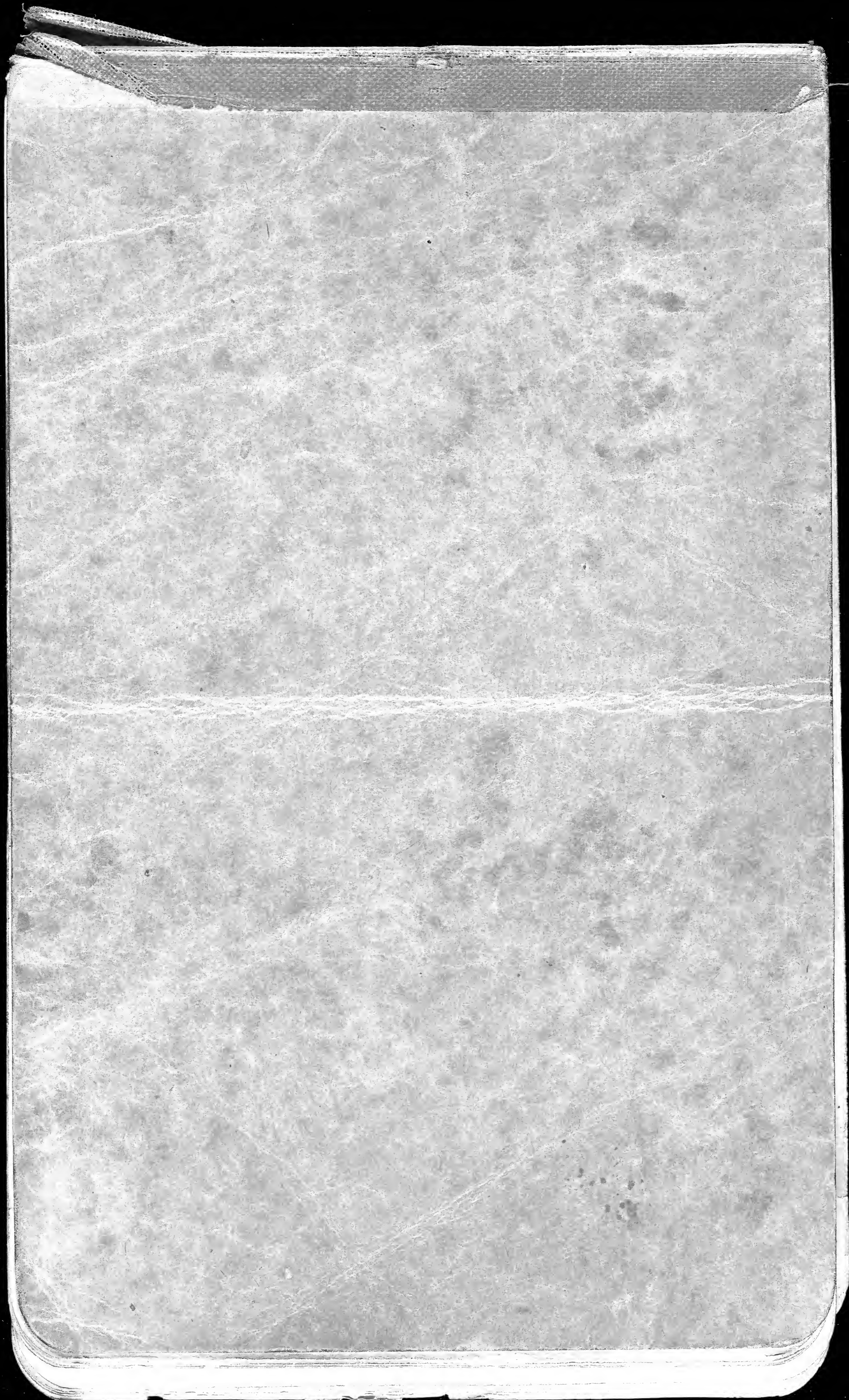
Prof. Harper
Clemson Co. paper

South of Chalybeate

on road.







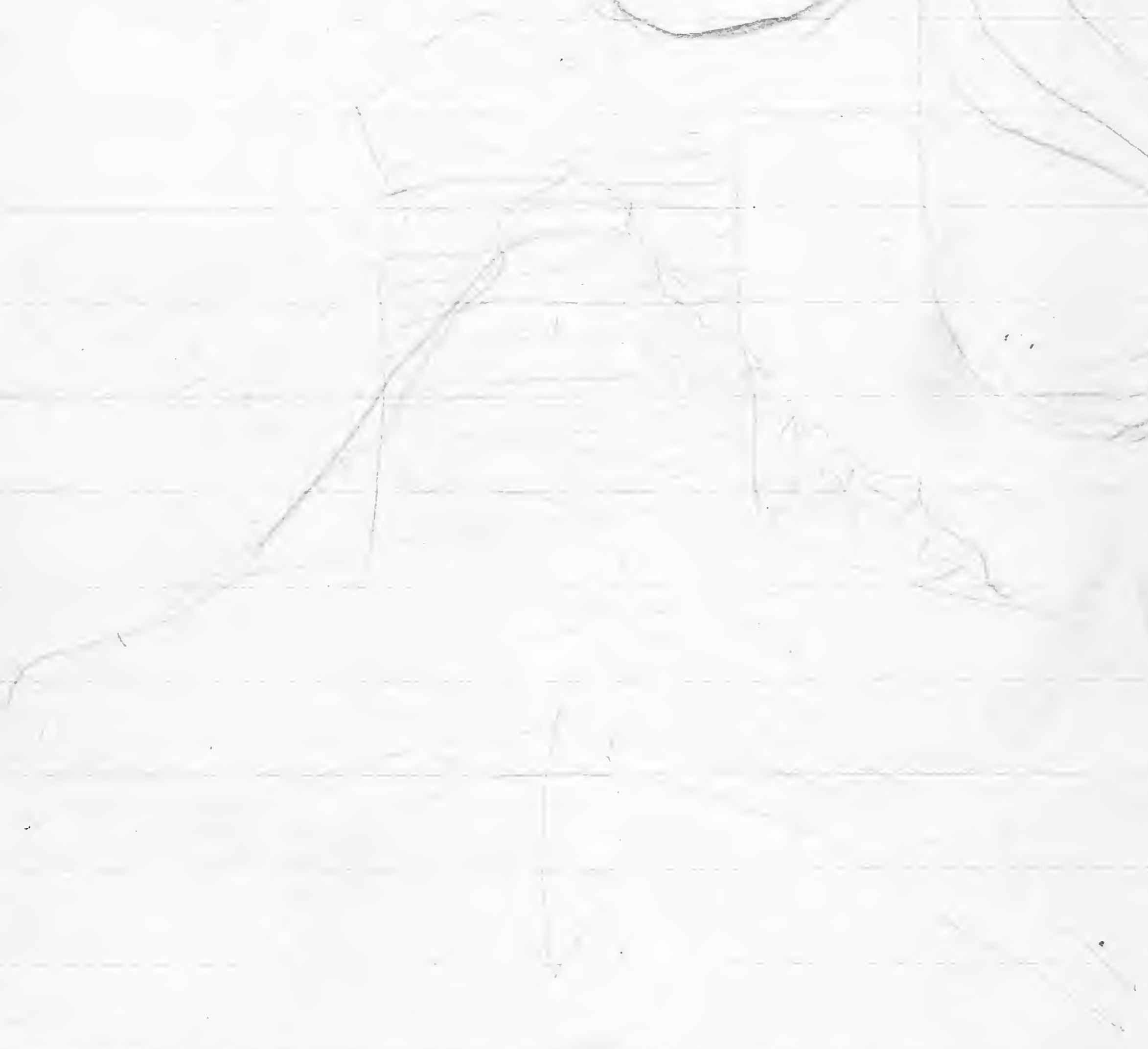


D W Dennis
Richmond
Buy of Fossils 1877.

163 Vine Street

463

Noah Roads



Whitaker

Quarry E end of Abundant R.R.

Friable quarry.

Beck quarry.

5 ft 2 (5 ft)

- 24 { 2 ft Porous massive l.
9 ft medium porous massive l.
5 ft 6 in. Very porous massive l. bituminous!
7 ft 6 in. Massive l. Pentamerus cc at base.

Q { 2 ft 3 in. shaly.

- 21 { 3 1/2 ft. Massive l. + thin interbedded + large *Hedysyllis* layers.
3 ft Limestone + shaly interbedded
10 ft Massive layers with *phyllina*. *Favosites*,
crinoidal fragments, *Favosites*, *Cladaria*,
2 ft Massive l. weathering very soft. Crinoidal,
fragmentary fossils at W end of quarry.
Favosites collected
2 ft 9 in. Massive very poorly bedded layers or rather
irregularly bedded.

R 6 ft 6 in. Well bedded + laminated. Cherty. fossils few.
Probably clayey beneath, at any rate
quarry stops at that level.

Corporation quarry
Frank Zink quarry
S. of Marshall Lake.

8 ft. { *Pentamerus* within 1 ft of base
Same large Favosites with small corals at RR quarry.
Cavennus L. rather thin bedded rubble *Platystrophia*.

- Q { 3 ft Shaly, + many small *Strophomena* flat on one side.
2 ft 6 in Limestone *Hypothyrid* near top, chief Coral horizon
3 in Shaly.
- 14 { 4 ft 3 in. Massive pure *cavennus*
5 ft 6 in. Massive. Much less *cavennus*.
1 ft 3 in. Massive layer.

85

Q

Quarry S of Walnut Street on W side of Clinton.
This quarry is about S 30 W of Zink quarry.

all in situ in upper part of quarry
See impressions like are collected
Strophomena, small but broadly flattened
Small globose small shells Favosites
Many large Favosites conical globose
small called

45
28

Pointed flat-backed Strophomena
Hedysites very large
Camarotoles round stems only

14 1/2 ft exposed limestone, below the 3 ft clay
layer of the Zink quarry

31 ft in total, covered, going N 60 W to another
quarry back of houses S of Walnut street.

4 ft 6 in limestone weathering shaly but not cherty (R)
6 in. grey l. somewhat crystalline
2 ft 6 in. limestone weathering shaly

S { 6 in. hard, grey, ripple marked, crests N 5 W 3 ft apart
3 1/2 in. high
4 in. hard, grey.

R (Cherty shaly layers like those at R R quarry are
represented along farm lane SW of quarry by
flat chert fragments in soil)

Along farm lane SW of Lower quarry S of Walnut^{SE}

S>

10 ft interval

T Whit. fine det. calc. limest. ore. Exposed also west-ward along same farm lane but up the western hill side

25 ft interval See next page for shorter right measurement.

V ~~Whit. fine det. calc. limest. ore.~~ ~~Exposed also west-ward along same farm lane but up the western hill side~~
~~Atyp. parv. ret. ent. aini~~ ~~Schuchertella~~
~~Atyp. parv. can. at. ret. ent. aini~~

Hillborn
S of Walnut street.

Gully east of small stream.

poorly crinoidal limestone, solid.

11 ft interval.

T - crinoidal l. + Whitfordella cc, *Athyra reticulata*,
Schuchertella.

17 ft interval

dark clay rock, weathering soft.

20 ft

12 ft interval

1 1/2 ft brownish rock, sp. mostly crinoidal in places

U

1 ft. crinoidal l. full of Whitfordella, some
Athyra reticulata.

1 1/2 ft interval, shaly limestone.

2 ft massive limestone, brown. Whitfordella cc
locally near middle of this layer.

8 ft

2 ft. Weathering badly = brownish limestone.

1 ft brownish l. fairly solid.

1/2 ft shaly l. + soft shaly stuff

1 ft. brownish l.

NE of B. Island

- 2 ft crinoidal l., interbedded with thin shaly l.
 1 ft. with interbedded fine grained shaly limestone
 4½ ft moderately crinoidal l., massive
 5½ ft crinoidal l., massive ^{spinelifer} 48
 14 ft massive l., somewhat crinoidal, massive 34
 13 ft interval. measured E through the hill.

61 ft (T) Whitfeldella rock like one of the layers
 at the localities S of Walnut Street
 in small gulley W of Spring S of farm house
 on E side of this hill.
 Whitfeldella l. at about same level
 on West side of hill W of quarry — 21

11½ ft of a sandy l. exposures, best exposed
 in lower 3 ft of section. — 9½

U ½ ft very typical Whitfeldella layers here. — 9
 9 ft brownish l. massive.

Top of Crat Orchard clay shale.

Hillston Condensed section

30?	Hillston ss.	157½
P	11 ft Black bituminous shaly l. + Pontamensis	146½
61	26 ft Covered.	120½
	24 ft exposed at RR quarry = Pontamensis beds.	96½
Q	3 ft shale with flat backed Streptelasma	93½
	3½ ft massive l. + Halysites rexus	
	3 ft limestone + shale interbedded	
21	10 ft massive l. chals.	
	2 ft Large Favosites collected.	
	2¾ ft massive l. Very irregularly bedded	72½
R	6½ ft Well bedded + laminated cherty shaly l. ^{Trinable Hill}	66
	5 ft Covered - S of Walnut St.	61
	13 ft Coarse crinoidal in part - Covered S of Walnut St.	48
	7½ ft additional at Bishop dam } massive l. exposed also at Bishop dam	
5	½ ft Poorly crinoidal l. ^{Ripple marked S of Walnut St}	
	10 ft interval.	
T	½ ft Whitfield l. a. 10 ft. layer,	48
	20 ft chiefly ls. much rich.	
U	½ ft Whitfield l. a. c.	
6	9 ft brownish l. massive	0
	62 ft Crab Orchard Clay	
	3½ ft Dayton	
	5 ft ferruginous Clinton with lower 1 ft strongly cross bedded	
	½ ft Strongly wave marked layer.	

41, 42 = 184
41

36) 28.6 / 8
2184

NE of Bisham dam

and many thanks to you
yours truly
J. B. 1881

NE of Bishers dam

Top of quarry NE of B. inter dam.
55 ft interval. All massive rock.

9 ft. covered with lower 3 ft possibly Crab Orchard.

5 1/2 ft of irregular Creek Archangels

5 1/2 ft disintegrated Creek Archanae } 6 1/2
66 ft continuous Creek Archanae clay }

3 1/2 ft. Depth of ground water

4 ft strongly ferruginous chert, very irregularly bedded, lens-shaped masses common.

1st strongly colored & conspicuous character.

Ripple, make 4 SDR units 2 - 2 1/2 ft apart

2 1/2 in. above base of cross-bedded to gravel
Smith

6 in. layer

2

5

Gilley Hill.

Hillsboro ss. level.

- 61 { 11 ft black bituminous shaly li. stuff with
Pentamerus in part of greenstone.
24 ft interval
Road turns of Marshall Pike toward south
26 ft. interval.
Base of Pentamerus zone
Flat Strophodonta layer.

Hillston
College & Ambrose hills

There is no certainty where the basal beds of the Pentamerous beds in the following section come in. Hence the crossed, crinoidal limestone may come in in the lower part of the Pentamerous section. Apparently, however, the crinoidal beds have a strong local westward dip here.

Westward 2 1/2 mi. along the Danville pike there is a quarry S of the road with *Strophomena* with flat back in upper part of thick basal rock. The underlying rock should be the basal part of the Pentamerous zone lithologically but contains no Pentamerous. 1/2 mi W, but N of Danville pike, is quarry with Pentamerous at top but not in underlying section. About 10 ft lower is blue limestone top with flat backed *Strophomena*. At quarry mentioned S of Danville pike the blue l. is overlaid by shaly cherty beds as at RR quarry, but blue l. here is thinner.

On Danville pike. SW of Hillston.
Pentamerous! bare rock however.

15 ft. interval.

13 ft. crinoidal, crinoidal l. NW of College building
on Cincinnati pike

crinoidal l. may correspond to lower part of
Pentamerous l. section,

Remains of Red. in Gravel.

St. I. Plant. Spruce St. I.

Along St. I. River bed. St. II

St. II. Pale shaly. St. 3+4

Crinoid stems - many white.

Subcont + Carb. Cpl. dip.

mill + Brn. shales.

Gravel + Brn. shales.

XV

Willard's conglomerate. Mill +

St 2.

Gravel + Brn. shales.

Dry in Brn. sh.

Run top of Brn. sh.

Other fossils.

Red. St. III. St. IV. St. V.

St 3+4

Red. St. IV. Crin. + Millard's

XVI

Brn. shales + Gravel.

St 2+3

Fossils, Gravel, etc.

St 4.

Red. in Gr. St. St. V. Millard's

XVII. St. 1. Mill + Brn. sh.

St 3.

Brn. sh. + Millard's

XVIII

Red. St. VI. Millard's

St 1+2

Gravel

Mountain of Red. Can Canals.

St. I. Stairs, Springs St. I.

Agony of St. Peter's beds St. II

St. II, Paleontology, St. 3+4

Crustaceans - large, small

Subcut + Carb. Cyl. deposits

millent + St. 127 shales

XV, 211 (diploids) corals, shells + St. 2

On coll. of 1st anthro. type in 1st coll. from top of 1st column. other fossils

Red. St. III, Stenocrinus

St 3+4, Red. St. IV. Corals + Molluscs

XVI - Stenocrinus, Gascones, St 2+3

St 4, Red. Can. St. St. V, Molluscs

XVII, St 1, Molluscs + Foss. Fossils

St 3, Can. Fossils, Molluscs + Fossils

XVIII, Red. St. VI, Molluscs

St 1+2, St 3+4, Red. St. VII, Stenocrinus, etc.

Worms of Pol. in G. n. n.

St. I. Plants, Spruce

Age of St. I. Spruce beds

St. II. Paleontology

Crustaceans - large

Subcut + Carb. Cpl. deposits

Worm + 127 species

XV

pt 2. In coll. of St. Andrews

Types in St. Andrews

New type of fresh bones

Other fossils

Pol. St. III. Stenocrinus

pt 3 + 4. Pol. St. IV. Crinoids + Mollusks

XVI. Stenocrinus - large specimens

pt 2 + 3

Crinoids, gonidia, etc.

pt 4.

Pol. in St. V. Mollusks

XVII. pt 1. Mollusks + Fossils

pt 3. Crin. Fossils, Mollusks

XVIII. Pol. pt 1. Crin. Fossils

pt 1. Crin. Fossils

Worms of Pol. in G. n. n.

St. I. Plants, Spruce

Agg. of St. I. plants

St. II. Pol. n. n. n.

Crustaceans - n. n. n.

Subcut + Carb. n. n. n.

Worms + St. I.

St. I. + St. II.

XV

Worms of Pol. in G. n. n.

St. 2.

On cutting of St. I. n. n.

On top of St. I. n. n.

Other plants

Pol. St. III. St. n. n. n.

St. 3 + 4

Pol. St. IV. n. n. n.

XVI

Worms of Pol. in G. n. n.

St. 2 + 3

On top of St. I. n. n.

St. 4

Pol. St. V. n. n. n.

St. 1

Worms + Pol. n. n. n.

St. 3

Pol. St. n. n. n.

XVII

Worms of Pol. in G. n. n.

St. 1 + 2

Information of Pat. from G. A. M. P.

St. I. Plant. Spruces St. I.

Agony of Pleasure beds St. II

St. II. Paleontology. St. 3+4

Chert - large white.

Sut. cut + cut. Cyl. deposits.

mill + 8-in. shales.

Shale + 12 in.

XV.

Willard's conglomerate. Miller +

St. 2.

Gr. calc. of 1st anthracite.

Gr. calc. in 1st anthracite.

From top of 1st anthracite.

Other fossils.

Pat. St. III. Stenocoryphe.

St. 3+4.

Pat. St. IV. Crin. + 2nd

XVI. Stenocoryphe. G. A. M. P.

St. 2+3

Crin. + 2nd. G. A. M. P.

St. 4.

Pat. Cr. St. St. V. Montic.

XVII. St. 4. Miller + G. A. M. P.

St. 3. Cr. + 2nd. Miller + G. A. M. P.

XVIII. Pat. St. VI. Montic.

St. 4.

St. 4.

The Journal of Pol. Sci.

Agony of Pleasant Lady

5 ut cont + cont. (cyl. d. 1/2 in.)

m. l. l. + 1000
 about + 12g
 5/24/00

On coll. of 1st author,
Dyke in Foster coll.
Near top of Dyke column,
above fossils.

024 3 + 4,

77 + 2.

XVII. Oct. 1860

invention from a general
in the third, in a fourth -

vicinity of Port. Lin. G. A. n. p.

St. I. Plant. Springs

Ag. of St. Pleasant leads. St. II

St. II. Paleontology. St. 3+4

Crustacean - large, etc.

St. cut + Cast. C. p. L. deposits.

m. l. n. + St. m. l. n. sh. l. n.

XV

vicinity of Port. Lin. G. A. n. p.

St. 2

St. cutting. L. m. l. n. sh. l. n. etc.
Fossil in St. m. l. n. sh. l. n.
Near top of L. m. l. n. sh. l. n.
Other fossils.

St. St. III. St. m. l. n. sh. l. n.

St. 3+4

St. m. l. n. sh. l. n. + m. l. n. sh. l. n.

XVI

St. m. l. n. sh. l. n. + m. l. n. sh. l. n.

St. 2+3

St. 4

St. Lin. G. A. n. p. St. m. l. n. sh. l. n.

XVII St. m. l. n. sh. l. n. + St. m. l. n. sh. l. n.

St. 3

St. m. l. n. sh. l. n. + m. l. n. sh. l. n.

XVIII St. m. l. n. sh. l. n. + St. m. l. n. sh. l. n.

St. 1+2

St. m. l. n. sh. l. n.

vicinity of Port. Lin. G. A. n. p.

St. m. l. n. sh. l. n.

Mineralogy of Pat. in Engrs.

St. I. Plants, Springs

Age of St. I. & Engrs. beds

St. II. Paleontology, 34, 344

Geology - Engrs. & St. II.

Strat. cont. + Engrs. Cpl. deposits

Engrs. + Engrs. Shells

Engrs. + Engrs. Shells

XV

St. 2

Engrs. in Engrs. beds

Engrs. in Engrs. beds

Engrs. in Engrs. beds

Engrs. St. III. Stratigraphy

St. 3 + 4

Engrs. St. IV. Engrs. + Engrs.

XVI

St. 2 + 3

Engrs. in Engrs. beds

St. 4

Engrs. in Engrs. beds

St. 5

Engrs. in Engrs. beds

St. 3

Engrs. in Engrs. beds

XVIII

St. 1 + 2

Engrs. in Engrs. beds

Engrs. in Engrs. beds

Engrs. in Engrs. beds

8777 1/2

2772 *Bryonia crebra*

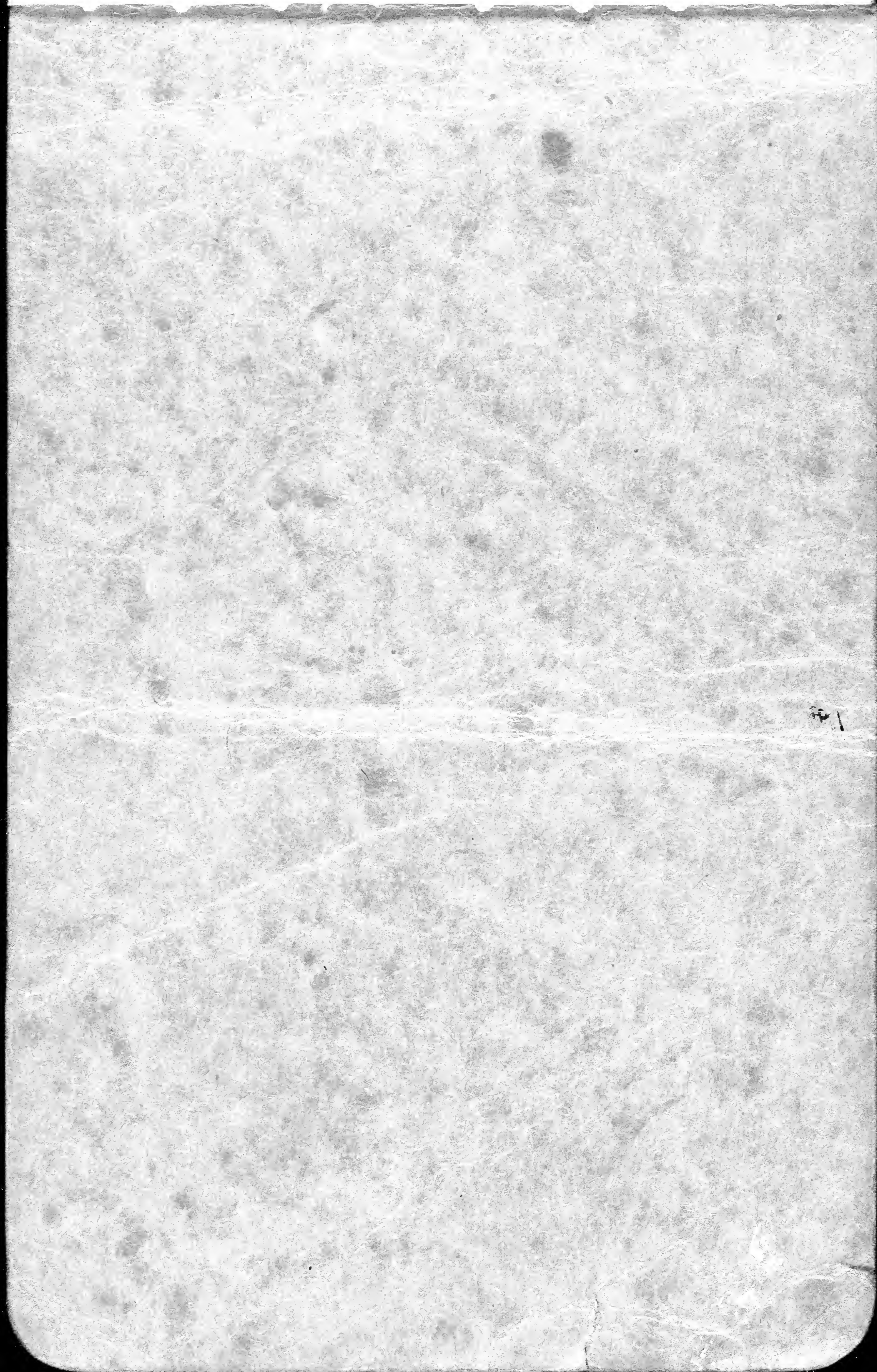
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Valle II. B. F. 15

Phaeophysalis androgyna, Owen.



No. 364.

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